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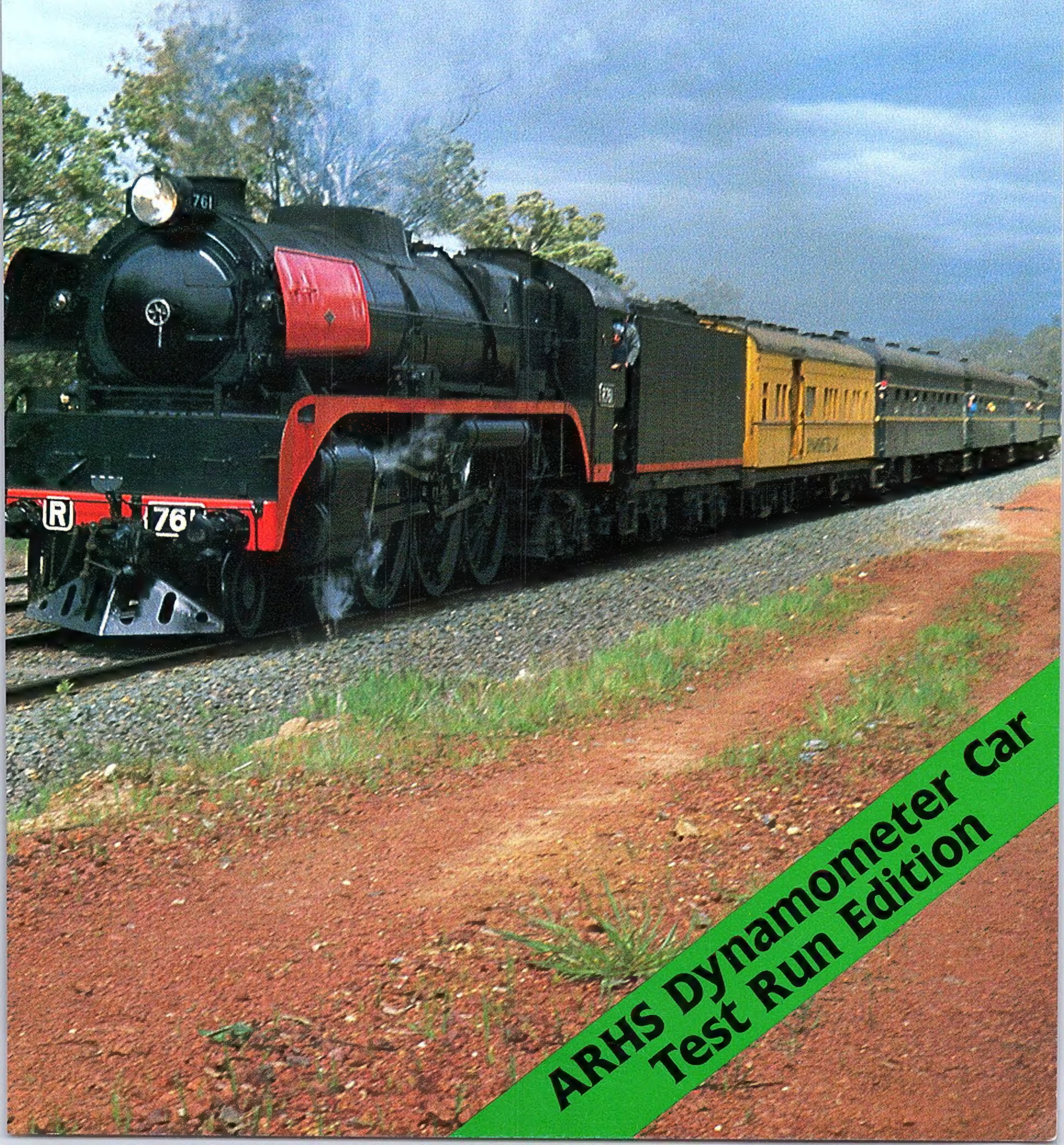
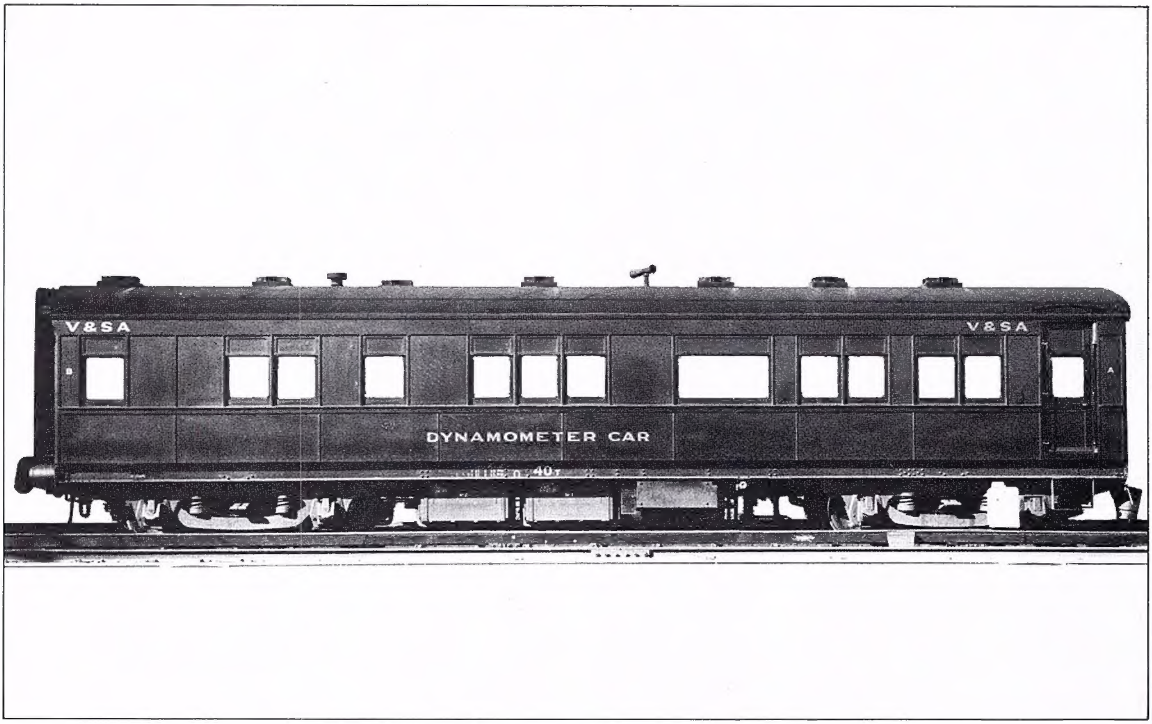
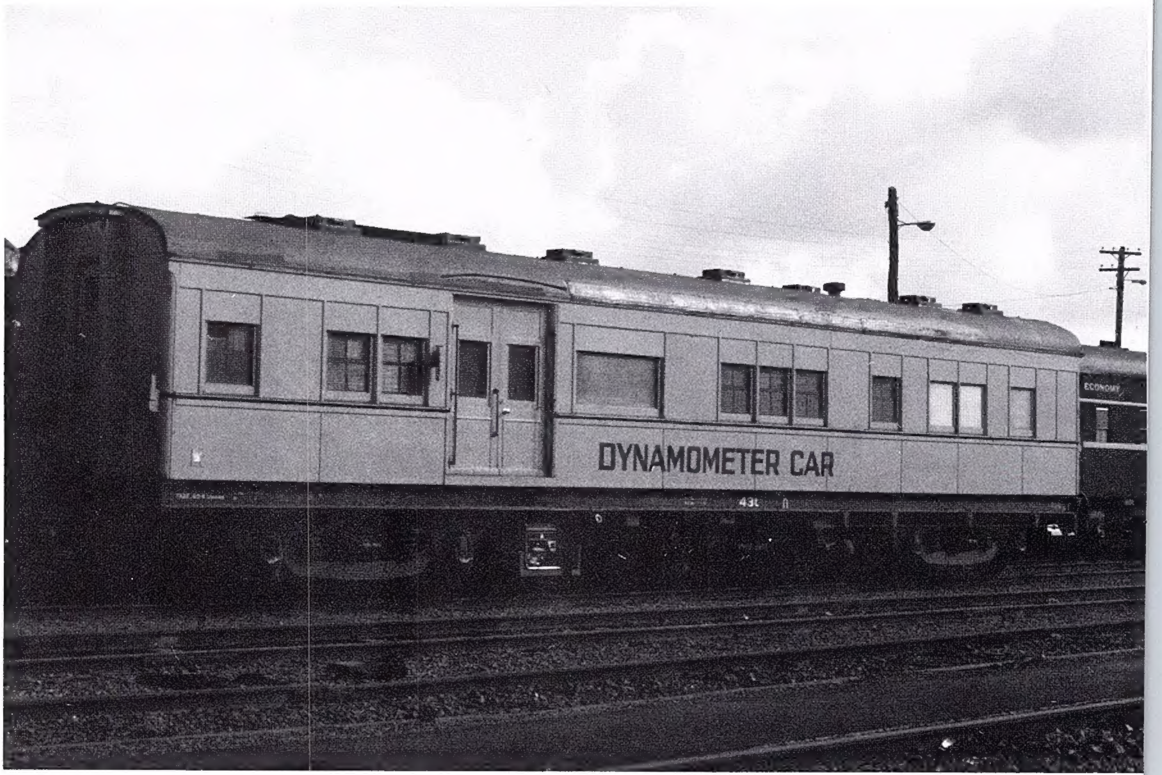


ARHS Dynamometer Car Test Run Edition



Dynamometer Car Then and Now



FOR ALL WHO ARE INTERESTED IN RAILWAYS

Newsrail

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Front Cover: R761 with the Dynamometer Car Test Train near Taradale during the journey to Bendigo. Sat.4.10.86. (Peter Silva)

Opposite above: Official photo of the Dynamometer Car as built. (ARHS Archives)

Opposite below: Dynamometer Car as it is today. (John Buckland)

ARHS Dynamometer Car Test Run

COMPILED BY PETER SILVA

On Saturday, 4th October 1986, some 220 railfans converged on Spencer St station for a trip with a difference – the ARHS Dynamometer Car Test Run with R761. Unlike most trips where the emphasis is on the destination or celebrating a historical occasion, the prime intention of this trip was to measure the performance of the locomotive. So shortly before the 09 30 departure time, standing in platform 5 was R761, Dynamometer Car, 3BKL, BK1, 2BK, *Goulburn*. A small train at 393 tons gross, but a load intended to allow the R to give a spirited performance on a run to Bendigo and return.

Photographic opportunities were limited on this trip so the chance of a standing shot at Spencer St was not to be missed. Platform 4, being clear of trains at the time, provided an excellent location for those prepared to walk around to there from platform 5. Then it was on board for an on time departure. As we made our way to Footscray we passed the track gangs busy at work on the Geelong lines at South Kensington. They had total occupation of those lines which was why our train had come from the *Steamrail* Depot via Sunshine.

As we continued on through the suburbs, the tour officials handed out the information on the day's mental and physical exercise, both optional of course. The mental exercise was in the form of enough information to calculate the power output of R761 from on-train observations. The lazy ones, no doubt, left that to the crew of the Dynamometer Car. The physical exercise took place at photostops as they were arranged on a walk forward basis. This avoided the additional expense of a safe working inspector to supervise setback movements on track covered by double line block safeworking.

A stop of 25 minutes was planned for Sunbury to allow the engine to take water and this was combined with the first photostop. All those who wanted a photograph walked almost to the Rupertswood platform to take up positions on the hill overlooking the line. The weather was overcast, as it had been all morning, with a rather cold wind blowing. The only bright spot during a seemingly endless wait for our train was B65 and X50 speeding through with the Up Swan Hill pass. Then, at last, that characteristic whistle of steam locomotive could be heard in the distance at Sunbury. A short wait and R761 came steaming under the bluestone road bridge, across the creek and on past the photolines to come to a stop at Rupertswood. A brief stop had been planned to pick up the photographers but a delay of 21 minutes occured because the Dynamometer Car had to be set up for the forthcoming test runs.

Now 24 minutes late we set off to climb the 1 in 50 away from Rupertswood. This was done with comparative ease and we thundered on through Clarkefield and Riddells Creek on the long climb to Gisborne. On we steamed to Macedon and the 1 in 52 bank beyond which was expected to really test the locomotive and the crew. But before we knew it, we had stormed over the top. With its light load, R761 crested the grade at a speed of 43 mph (69 km/h). Few people, if any, had climbed the bank faster behind a steam locomotive. It was an experience you could only appreciate by being there.

Having gained 5 minutes against the schedule since Rupertswood, we rolled into Woodend for our next planned stop. In pleasant, sunny weather most people took the opportunity to alight. A standing shot of the train at Woodend was uppermost in the minds of

R761 prepares for departure from Spencer St with the ARHS Dynamometer Car Test Run on Sat.4.10.86. (John Dare)

The test train accelerates away from Taradale on route to Bendigo. (Graham Withers)

nearly everyone with a camera. Without an "official photo-line" a great deal of calm and patience was required to take a photograph that did not have too many people obscuring the train. After taking photographs, the next highest priority seemed to be having a look inside the Dynamometer Car. The recording equipment was quite astounding. Consisting of balls and levers and motors and pens and paper charts it was quite impossible to work out how this thing, that looked more like a Wellsian time machine, operated.

At 11 55 we bade farewell to Woodend. We were now 32 minutes late as we had overstayed our stop by 13 minutes. With a generally downhill run to Taradale it was time to sit back, relax and enjoy the ride to the next photostop at the station there. Planned as a run through the platform it was somewhat spoiled by those people who had left the train far too late and were still straggling down to the crowded photolines. After everyone took what photographs they could, it was back on board for a short haul to the 110.5 km point for another photostop. This too did not quite go as planned. With all the lost time the sun was not on the side of the train it was expected to be and so a new position was hastily found for the photoline. Photostops over for the time being, we steamed on through the Elphinstone Tunnel and on to Castlemaine which we passed non-stop a further 7 minutes late.

The final photostop for the day was at Ravenswood. It had been planned to walk forward while the Dynamometer Car and the locomotive were being prepared for the climb up to and through Big Hill Tunnel. However as we had already lost 39 minutes and looked like losing more, the arrangements were changed to a quite respectable standing shot at the block post itself. Although by the time all of the camera toting customers had been satisfied and reboarded the train, 14 minutes had elapsed, 6 had been saved against the schedule. However, as always seems to be the way of things on fan trips, most of the savings were used in the final set up of the Dynamometer Car 4 minutes down the line from the block post. Final preparations made, we were off to tackle the 1 in 50 grade to the tunnel. As with the other grades that day, we climbed it without difficulty and, once through the tunnel, it was all downhill to Bendigo.

We arrived at platform 2 to the greetings of a number of local railfans. It was 13 56 pm and time to go and find lunch for those who had not brought their own. As we were 41 minutes late those who had planned on a counter lunch were looking quite worried. Shortly after our arrival, the locomotive was cut off and taken to the depot to be coaled and turned. As the Dynamometer Car can only measure draw bar forces at one end, it also went to the loco with R761 to be turned. Once prepared, R761 returned to platform 2 to make up our train and to be watered. The train consist for the return journey was R761, Dynamometer Car, *Goulburn*, 2BK, BK1, 3BKL.

With a non-stop run planned for the Up trip, it was time for the photographers to get their last shots for the day. The weather had been becoming increasingly overcast. Though we did not know it at the time, rain would set in after we left Bendigo and so the photographers did not miss any real opportunities on the way home.

During our stay at Bendigo Mr John Hearsch, Chief General Manager — Transport Operations Division, who was travelling on the train, officially authorised a maximum speed of 115 km/h for the return journey. The stage was set for an exciting trip home. Our departure from Bendigo was at 16 17 which was 12 minutes late against the schedule on the S Notice. However, as the schedule was based on a maximum speed of 100 km/h, its only value now was as a base reference. The late departure was intentional to compensate for the faster running so that we would arrive at the right time to take our path through the suburbs. In the increasing gloom we steamed out through Bendigo yard and started the long climb through Golden Square and Kangaroo Flat to Big Hill Tunnel. R761 was in fine form and sounded supurb as it reached the top of the grade and sped into the tunnel at 47 mph (75 km/h).

We were only 14 minutes out of Bendigo when Ravenswood slipped past. Even though we had been climbing most of the way, this was 3 minutes better than the schedule. Another 2 minutes had been recovered by the time we were rounding the 65 km/h curve at the Up end of Castlemaine and heading off to Elphinstone Tunnel. By now the doorways were only for the hardy. Not only did one have to contend with the cinders and the wind, it was now raining. For those that persevered, the experience was well worth it. Once through the tunnel, we steamed on to Elphinstone which we passed at 16 54. The climb from Castlemaine had taken only 11 minutes which was 3 minutes better than allowed. From Bendigo we had bettered the schedule by 8 minutes and were now only 4 late. All over the train people were realising that this was going to be a very fast run to Melbourne. Any lingering doubts would have vanished as we rushed through Kyneton only 1 minute behind the original schedule and on to Woodend to be there 1 minute ahead of time.

With the second half of the trip being virtually downhill all the way with 115 km/h running permitted, the main topic of conversation was the probable arrival time at Melbourne. As we slipped down the Great Dividing Range we continued to pick up time. Two minutes gained to Gisborne and another two each for the runs to Sunbury and Diggers Rest.

By the time we reached Sydenham we were 8 minutes ahead of the schedule and thoughts now turned to whether we were going to be blocked by the St. Alban's spark or not. As we sped through, it could be seen in the back platform and so a good run into Melbourne looked assured. We continued to pick up time and were 11 minutes ahead at Sunshine. Another minute was gained by the time we reached South Kensington and the 12 minutes would be the most we would gain against the schedule. We were slowed appreciably as we travelled to North Melbourne and slipped back to 11 minutes ahead.

It was after North Melbourne that the problems with running early were graphically demonstrated. We had run express all of the way from Bendigo and managed to pass North Melbourne without a stop even if it was at about walking pace. However we did not get much further when we came to a complete halt at a signal. The prospect of a run from Bendigo in less than 2 hours slowly disappeared as the minutes ticked by. After 4 minutes we started moving and slowly made our way past Franklin St Box. We had not travelled very far when, to the frustration of all, we again halted at a signal. Another 6 minutes ticked away before we moved off and made our way into platform 5 at Spencer St. We arrived 2 hours 3 minutes after leaving Bendigo and ended the trip 2 minutes down against the schedule having taken 17 minutes to travel from North Melbourne when 4 had been allowed.

If people were disappointed in not making Melbourne in less than 2 hours, it did not show. Whether they were young fans who know the R class only as a railfan locomotive or the old hands like Mr Colin Holl, originally booked to drive when the trip was organised a year ago but now retired, they had had a marvellous day. Everyone enjoyed themselves and gathered at the locomotive to acknowledge the efforts of those involved.

This record of the day's events would not be complete without my doing likewise. First and foremost are the locomotive crews. Mr Lyndon Helsby and Mr Des Connors on the Down and Mr Jack Sutton and Mr Daryl Hannon on the Up. Without their experience and efforts the marvellous performance of R761 would not have been achieved. Mr. Philip Etherton, Mr Philip Dunn and Mr Peter de Bruyn who staffed the Dynamometer Car also played an important part in the success of the day. Without their efforts both on the day and beforehand, there would have been little point in taking the car. The efforts of the ARHS Tours Committee, in particular the organisers Mr Peter Keen and Mr Ian Lornie, must be acknowledged for the organisation of a most enjoyable trip.

Finally and by no means less important, the efforts of all those at *Steamrail* Victoria who had a part in the rebuilding of R761 are acknowledged. Its performance on the day showed it to be restored as good as, if not better than, new.

In closing, the fate of a planned sequel to the day's events should also be recorded. R707 was to be given a chance on 25 October 1986 to prove itself as good as, if not better than, R761. While there was a lot of interest in this trip unfortunately there were not enough bookings to allow the trip to run. Perhaps in the future there will be enough interest in another Dynamometer Car trip and R707 will get its chance.

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RUNNING TIMES

Train No. 8095

DOWN:		*Schedule per S.4897/86*		*Actual Times*
Spencer St	dep.	09 30	dep.	09 30
Franklin St Box		09 32*		09 34*
North Melbourne		09 34*		09 36*
South Kensington		09 36*		09 38*
Footscray				09 42*
West Footscray				09 44*
Tottenham				09 46*
Sunshine		09 44*		09 48*
Albion				09 49*
Ginnifer				09 51*
St. Albans		09 49*		09 54*
Sydenham		09 54*		09 59*
Diggers Rest		10 00*		10 05*
Sunbury	arr.	10 05 ETW	arr.	10 11
	dep.	10 30	dep.	10 36
Rupertswood		10 35 A	arr.	10 38
			dep.	10 59
Clarkefield		10 49*		11 11*
Riddells Creek		10 54*		11 15*
Gisborne		11 01*		11 21*
Macedon		11 06*		11 25*
Woodend	arr.	11 13 A	arr.	11 32
	dep.	11 23	dep.	11 55
Kyneton		11 33*		12 05*
Malmsbury				12 12*
Taradale		30 minutes	arr.	12 17
		photo in section	dep.	12 34
110.5 km			arr.	12 37
			dep.	12 52
Elphinstone		12 15*		12 54*
Castlemaine		12 27*		13 06*
Harcourt				13 10*
Ravenswood	arr.	12 40 A	arr.	13 19
	dep.	13 00	dep.	13 33
Approx. 147 km			arr.	13 37
			dep.	13 42
Kangaroo Flat		13 09*		13 51*
Golden Square				13 53*
Bendigo	arr.	13 15	arr.	13 56

Train No. 8096

UP:		*Schedule per S.4897/86*		*Actual Times*
Bendigo	dep.	16 05	dep.	16 17
Golden Square				16 21*
Kangaroo Flat		16 10*		16 23*
Ravenswood		16 22*		16 31*
Harcourt				16 39*
Castlemaine		16 36*		16 43*
Elphinstone		16 50*		16 54*
Taradale				16 56*
Malmsbury				17 00*
Kyneton		17 06*		17 07*
Carlsruhe				17 11*
Woodend		17 16*		17 15*
Macedon		17 22*		17 19*
Gisborne		17 25*		17 22*
Riddells Creek		17 29*		17 26*
Clarkefield		17 33*		17 30*
Rupertswood				17 36*
Sunbury		17 42*		17 37*
Diggers Rest		17 47*		17 40*
Sydenham		17 53*		17 45*
St. Albans		17 58*		17 49*
Ginnifer				17 51*
Albion				17 52*
Sunshine		18 04*		17 53*
Tottenham				17 56*
West Footscray				17 57*
Footscray				17 58*
South Kensington		18 12*		18 00*
North Melbourne		18 14*		18 03*
Signal			arr.	18 05
			dep.	18 09
Franklin St Box				18 11*
Signal			arr.	18 12
			dep.	18 18
Spencer St	arr.	18 18	arr.	18 20

* — Non stop. ETW — Engine take water.
A — Organiser requested stop.

Actual times recorded to nearest minute by E. Godwin.

Dynamometer Car Test Train leaves Sunbury under overcast skies. Sat.4.10.86. (M Vandyk)

R Class Performance — Dynamometer Car Test Run

PHILIP DUNN AND PHILIP ETHERTON
V/Line Motive Power Engineering, February 1987

The performance of R class locomotives 707, 761 and 766 has been of interest to *SteamRail* officials, railway enthusiasts and V/Line Engineers since their restoration. Are they up to original standard? How do they compare with V/Line's diesel fleet?

With a diesel electric locomotive, meters can be connected into the high voltage circuit to give a direct and very accurate reading of voltage and current, and hence power. For a steam locomotive, a dynamometer car is required. The permanent return to Victoria of the VR&ANR joint stock Dynamometer Car presented the opportunity to carry out these tests.

Accordingly, a trip was scheduled for late October 1985, but had to be cancelled due to locomotive crew shortages. After much planning, the Dynamometer Car test trip took place on the 4th October 1986.

Note on Horsepower: To quote the "horsepower" of a locomotive can be quite misleading as its value depends very much on where it is measured. Readers may be aware of the terms "drawbar", "equivalent drawbar", "rail" and "indicated" horsepowers. The Dynamometer Car measures drawbar horsepower (dbhp), at the tender drawbar. Equivalent drawbar horsepower (edbhp) is the dbhp equivalent to being on level track (i.e. the power consumed by the locomotive in moving its own weight up a grade is added to the dbhp to give the hp it can produce on the level to haul a train). Rail horsepower (rhp) is the horsepower the locomotive can produce at the driving wheel — rail interface and is calculated by adding the estimated power required to move the locomotive against its rolling resistance (i.e. axlebox friction, wind resistance, flange resistance, etc.). In this article, dbhp, edbhp and rhp will all be given wherever they can be calculated to enable comparisons to be made with other artices, here and overseas, on locomotive performance.

THE TEST TRIP

For the trip, the load behind R761's tenders drawbar was the Dyanmometer Car (40.6 t), BK (36.1 t), BK (36.1 t), BKL (41.6 t) and *Goulburn* (50.8 t). With an estimated 18 tonne of people, cameras, food and drink, this gave a total of 223 tonne, or 220 tons, trailing.

Spencer St - Sunshine: Due to speed restrictions in the suburban area and to allow the locomotive to warm up, no more than first barrel on the throttle was used in this section. Boiler pressure was steady on 205 psi. At West Footscray, the speed was 64 km/h with 900 dbhp on the Dynamometer Car gauge.

Passing Tottenham, the speed was 75 km/h at 850 dbhp. The throttle was shut coming downhill from Tottenham, and partially re-opened approaching Sunshine, which was passed at 66 km/h and 400 dbhp.

Sunshine - St. Albans: At Albion, at 76 km/h and 205 psi, the throttle was moved to the fully open position, doubling the output to 800 dbhp. This continued until approaching Ginifer where the throttle was shut. The train was brought to a stand at a signal just before St. Albans.

St. Albans - Diggers Rest: Full gear was used to start the train on the grade before St. Albans, with the tractive effort peaking at 17,800 lbf. The cut-off was reduced to 12″ (43%) and left there, the throttle fully open. Speed quickly increased to 51 mph at the 20.6 km mark, with an average of 910 dbhp with peaks up to 1000 dbhp. This level of performance was sustained until after Diggers Rest, where, the throttle was closed. Throughout this section, boiler pressure remained around 205 psi and horsepower varied between 900 and 1200 dbhp. Maximum sustained output was 1090 dbhp. Calculations give an average of 1840 rhp for this section.

Sunbury - Gisborne: At Sunbury, the R was watered and a photostop held, with the train stopping at Rupertswood. At this location, it was necessary to check the hydraulic oil lines in the Dynamometer Car. This was done, causing a delay of around 15 minutes, but unfortunately, when the train left Rupertswood, it was found that the horsepower and tractive effort were not being measured. This did not correct itself until the 64 km post and so no figures were obtained up Sunbury Bank or on the long climb to Gisborne. (We still do not know the reason for this fault). However, the speedometer was working, and some calculations can be made of the power output.

The R departed Rupertswood with 200 psi on the pressure gauge, and was soon at full throttle with a cut-off of 18 in (64%) and a boiler pressure of 195 psi. sunbury bank was topped at 26 mph, but still accelerating and thus an accurate output cannot be calculted.

Riddells Creek was passed at a true 63 mph with the cut-off back at 10″ (36%). The train recorded a balance speed up the 1 in 57 grade just before Gisborne of 39 mph at 14″ cut-off (50%).

This equates to 1100 dbhp, 1840 edbhp or 2130 rhp.

Gisborne - Woodend: The train slowed to 20 mph on the approach to Gisborne and when the throttle was opened fully. The Dynamometer Car was again working correctly. With 15″ (54%) cut-off R761 accelerated up the grades and reached a maximum of 61 mph in the "dip" after Macedon. On the long 1 in 52 grade, speed gradually fell and ½ km from the top, the cut-off was increased to 18″ (64%), with superb accoustics. Such was the vigour of the climb that the grade was topped at 41.3 mph with speed still falling (i.e. momentum had still not run out). the Dynamometer Car recorded at this point 1090 dbhp. From the chart, it is estimated that the balance speed would have been 39 mph, which then gives a edbhp of 1905 and a rhp of 2190.

It is of particular note that working the R class this hard was not "lifting" the fire, and boiler pressure and water level were dropping only slowly.

Woodend - Castlemaine: The running is predominantly downhill after Woodend and speed was held at maximum permitted speed for kilometre after kilometre.

Castlemaine - Bendigo: After slowing through Castlemaine, the R was accelerated up the grades out of Castlemaine in full throttle, with the cut-off initially at 12″ (43%) reducing to 9½″ (33%), then 9″, 8″ and down to 4½″ (16%) when the speed reached around 60 mph just after the 133 km post. Dbhp stayed between 1000 and 1100 hp. On the steeper grades, the cut-off was then increased to 11″ and finally 14″ (50%), the grade being surmounted at 55 mph and 1160 dbhp. Boiler pressure varied between 200 and 215 psi.

On the 1 in 50 grade after Ravenswood, the train was stopped and with 210 psi, full throttle and 18″ (64%) cut-off was accelerated towards Big Hill Tunnel 970 dbhp was recorded entering the tunnel, but the train was still accelerating and it is only possible to say that the edbhp was over 1600.

Return Journey, Bendigo - Melbourne: The return journey was intended more as a speed run (the aim being 2 hours or less) than a maximum horsepower output test. There were no scheduled stops. Highlights of this part of the trip follow.

Up the 1 in 50 grade to Elphinstone Tunnel, R761 reached a balance speed of 36.5 mph and a reading of 980 dbhp. This gives 1780 edbhp and 2040 rhp.

On the easier grades out of Kyneton, the 1 in 168 was topped at 56.5 mph at 1080 dbhp, and still accelerating. The rail horsepower was over 1980 hp.

On the 1 in 158 3 km on, a balance speed of 64 mph was reached with 1040 dbhp recorded. This works out to 1480 edbhp and 2130 rhp. At the 62 km post, the maximum speed allowed for the trip was recorded.

For those who did not take note of the running times, departure from Bendigo was 16 17 hours, North Melbourne being passed at 18 03 hours. However, due to no platform being available at Spencer St for arrival of the special, the train was held outside Spencer St, eventually being allowed to arrive at 18 20 hours.

The above results are summarised in the table below.

Table of Results

Test Location km	*Location*	*Speed km/h*	*Cut-off*	*Boiler Pressure*	*dbhp*	*edbhp*	*rhp*
14-15	Albion - Ginifer	76			800	N/a	N/a
20-36	St. Albans - Diggers Rest	82-100	12″	205	900-1200		1840 av.
41.5-42	1 in 50 Sunbury Bank	42 accelerating	18″ then 15″	195	N/a	N/a	N/a
62.5	1 in 57 approaching Gisborne	62.5	14″	205	1100 calc.	1840	2130
74.5	Macedon Bank 1 in 52	66.5 est. balance 62.5	18″	200	1090	1905	2190
137	1 in 122 Castlemaine - Ravenswood	88	14″	210	1160	N/a	N/a
150.2	1 in 50 Big Hill Tunnel		18″	210	970	1600 +	
115.5	Elphinstone Tunnel 1 in 50	59	15″	N/a	980	1780	2040
88.4	Top of 1 in 168 Kyneton - Woodend	91 accelerating	N/a	N/a	1080	1460 +	1980 +
85.4	Top of 1 in 158 Kyneton - Woodend	103	N/a	N/a	1040	1480	2130

R CLASS POWER

What can be said of these results? One test trip does not provide enough data to fully document R class performance, as was done in the 1950s. But, it can be stated that R761 was fully up to the standards laid down from these early tests. These established that the "continuous" power output of an R at around 35-40 mph was 1600 edbhp and R761 proved itself capable of producing 1600-1800 edbhp whenever required.

The best short term output seen was 1900 edbhp and any mechanically sound R class should be able to produce this sort of output, providing started at full boiler pressure, for a short "sprint", say around 5 minutes. This would deplete the boiler's steam and water levels, but appears to have no serious effect on the fire, if in good condition. As this output was recorded using 18" cut-off, it is possible that an R class could develop over 2000 edbhp using full cut-off (21").

In terms of power at the rail, an R is certainly capable of producing over 2000 rhp. The continuous output appears to be around 1800-1900 rhp, with a short term maximum of almost 2200 rhp.

A comparison of these figures with those obtainable from diesel electric locomotives may be of interest. Solely from a power production view (i.e. rail horsepower) the R class has a higher continuous power output than B, S, X and 2000 engine horsepower X class locomotives (which can produce around 1240, 1490 and 1720 horsepower at the rail respectively). The A and N class, at 1980 rhp have an advantage of around 100 hp.

For short term output, the R, at 2200 rhp has an advantage over even the A and N class, although diesel-electric locomotives also have the capability to produce extra power over than nominal rating, as the parasitic load (cooling fans, air compressor etc.) on the engine varies. Thus the A/N may produce at times up to 2080 rhp, but this is not controllable by the driver.

The picture changes however when locomotives are compared on their ability to haul a train (we are only considering passenger trains and locomotives in this article). The problem then becomes one of weight. The R has to move 180 tons around, whereas an A or N weighs "only" 120 tons. The difference is equivalent to about 1½ carriages and is the reason why the dbhp figures recorded throughout the trip seem so low. With a trailing load of 220 tons, and a loco mass of 180 tons, a lot of the 1800 rhp the R was developing was being used to move itself. The question of train performance becomes one of the power/weight ratio, as always. The R on, say, a 3 car N set has a power/weight ratio of 5.8, while the very similar power output A or N class on the same train has 7.7 rhp per ton (it may be of interest to note that the A class would also 'walk away' from the N at higher speed, as the new N class are not as aerodynamically efficient as the 1950s body style of the A class).

Thus, the latest turbo-charged 12 cylinder diesel electric locomotive has a clear advantage over the R class on the usual 3 car set now run by V/Line. On heavier trains, such as a double N set or 8 wooden bodied carriages, the power/weight ratios are much closer and the R's ability to produce higher horsepower for short periods would probably enable it to keep up.

CONCLUSION

Now that some experience has been gained in the performance testing of steam locomotives, it is hoped that further test(s) may be arranged, preferably to Ballarat (via Bacchus Marsh). More accurate data would be obtainable on the long steady climb up Ingliston Bank. It is expected that 2000 edbhp would be obtainable, using full cut-off at between 35-40 mph, as a very short sprint. For the present R761, and presumably other R class locomotives, is/are capable of producing 1600 edbhp (1800 rhp) continuously and up to 1900 edbhp (2200 rhp) for short periods.

R761 climbs Macedon Bank with ease, during the run to Bendigo. (Terry Dexter)

Estimating R761's Performance to Bendigo

R L ABBOTT

The question which spurred the running of the R761 Dynamometer Car Test Run by the ARHS was — "can an R class develop over 2000 h.p.?" It was convincingly answered on Saturday, 4th October 1986, with a very definite **yes**.

One ex-steam driver, until recently Assist. Superintendent of Loco Running for V/Line, Mr Gerald Dee, summed up the run — "that's the fastest I've ever been over the top of the Macedon Bank with **any** loco".

The train consist of 5 cars for a trailing load of 220 tons included the V&AN dynamometer car staffed by V/Line test engineers.

The load was deliberately kept light, so that the 45 to 55 mph speed required for maximum power, could be reached on the grades on the Bendigo line.

The driver for the run to Bendigo was Mr Lyndon Helsby and firing was Mr Des Connors. For the return trip Mr Jack Sutton had the honour of driving with Mr Daryl Hannon as fireman. All are very capable V/Line drivers who started their careers in the days of steam and their experience allowed them to bring out the best in the locomotive.

This article deals with some rail h.p. estimates from timings between stations and the method by which they were obtained — a method rudely called the "Hand Held Dynamometer" by one very senior railway executive. As the locomotive, rail h.p. and its method of estimation are products of the era of imperial measurements, this article will use such measurements also. Track details are taken from the "1927 Victorian Railways Grades Book" republished in 1975 by the Association of Railway Enthusiasts.

The climb up the Macedon Bank to the top of the Dividing Range at 1902 ft elevation at the 46½ m.p. (now 75 km post) is the glamour run with its 2.4 miles of 1 in 52 grade. Some of the other longer uphill sections like Riddells Creek to Gisborne, Kangaroo Flat to the Big Hill tunnel and Castlemaine to the Elphinstone Tunnel, are better for sustained high powers, and they do not have the high speed run at the bottom of the grade. But what were the powers achieved? For "all out" running, the average of 5 checks at long cut offs of 15" to 18" was 2400 rail h.p. For "sustained" running the average of 7 checks at 10" to 12" cut off was 1890 rail h.p. No wonder the acoustics were superb! R761 has a harder and sharper exhaust note than others, more like a NSWR 38 class.

Power Output Measurement

The power output of a steam locomotive is rarely quoted in specifications, for two main reasons. First, it is difficult to measure accurately without special equipment like a dynamometer car, or by taking indicator diagrams with a recording pressure gauge, of the steam pressure in the cylinder on the piston, during its stroke. From this, the indicated h.p. (i.h.p.) is calculated. Secondly, it is a very variable quantity, unlike the power of a diesel.

With a diesel, the power is set by the throttle "notch" controlling engine r.p.m. and fuel injector and load regulator settings, plus it operates on a high grade fuel of very constant specification. Once on notch 8, full throttle, the driver can do nothing to increase it, but it does give the same power day in and day out — subject to good maintenance. The normally quoted power of a diesel electric loco is the rated h.p. for traction — into the generator flange. To obtain the tractive effort and power, at the rail, that postage stamp sized adhesion pad, which actually moves the train, the rated power must be factored for the electrical losses in the generator and traction motors — around .80 to .83 for old DC equipment, and .84 to .87 for modern AC alternators.

But with a steam loco, the power depends very much on the skill and determination of the crew, the quality of the coal, which varies enormously, the cleanliness of the fire and the boiler, and the front end drafting efficiency. A steam loco (like all heat engines) is an **air** burning prime mover — there must be the right amount of air supplied to burn the coal in the firebox.

As mentioned previously, steam loco powers come as cylinder or i.h.p., rail h.p. (r.h.p.), or draw bar h.p. (d.b.h.p.). The d.b.h.p. is quite a bit less than r.h.p., by the power needed to move the loco as a vehicle — about 300 to 400 h.p. for the r. d.b.h.p. must also be corrected to "level d.b.h.p." — to eliminate the effect of grades.

The accuracy of the simple methods used to obtain the results in Table 1 is probably no closer than ± 10%. Quite a number of readings must be taken to get a fair average. There are 3 main sources of error, apart from timing mistakes affecting speed. The first is train weight, as V/Line nominal car weights assume full cars, which may not be the case. On 4th October, the train was packed, so they have been used. Steam loco weight also decreases as fuel and particularly water is used, and a 180 ton average is taken, down 9 tons from the maximum. When working hard, about 15 tons of water and 2½ tons of coal is consumed (6 lbs of steam from 1 lb of coal) per hour.

The second possible error is in rolling resistance, there are dozens of formula for its estimation, but one from Kemps Engineers Handbook is used, because of its simplicity and the "sensible" results it has given in over 40 years of use. It is r.r. (lbs) $= 5 + .003\,V^2$ per ton, where V = mph, and includes loco resistance. For diesels, it gives too high results, and was modified to r.r. (lbs) $= 4 + .002V^2$ (Ref. 1) as a result of NSWR tests.

Third, and the most important and insidious likely error, is momentum loss or gain over the test section, from speed loss or gain between starting and finishing points. Thus, the actual grade between check points must be corrected to the "virtual" grade, using the velocity head formula (V (ft) $= .035V^2$ (Ref. 2). In these metric days, the formula has become V (m) $= .0041V^2$ where V is measured in km/h.

Since velocity head varies with the square of the approach speed, it plays a major role in the traction dynamics of modern high speed trains like the French TGV, or the proposed VFT — doing Sydney to Melbourne at 350 km/h. At this speed, the V.H. is 480 m, the vertical distance the train can be lifted by kinetic energy, allowing the use of steeper than conventional grades that are largely run on momentum.

For the all out sprints over the last kilometre or two of the steep grades, it is often difficult to be sure that all momentum has been run out, so some peak power figures in Table 1 are marked † to indicate probable momentum effects. A study of the dynamometer results should give an idea if momentum was still assisting climb speed.

Analysis of Results

In Table 1 columns are included for cut off (measured in inches) and boiler pressure and water level. The cut off is the length of stroke during which steam is admitted to the cylinder, and very roughly, is equivalent to throttle notch on a diesel. At high powers, a steam loco is run at full throttle, and power is adjusted by the use of the reverser wheel, controlling cut off. Cut off figures are often shown in percentage of the stroke. For the R class 28″, 7″ = 25%, 12″ = 43%, 18″ = 64% and full gear 21″ = 75%, the latter is only used for starting. As speed increases, cut off is normally shortened, as steam consumption can exceed steam generation. In the original 1954 VR dynamometer tests, the locos were driven to a cut off chart, giving 18″ at 21 mph, 15″ at 30 mph, 12″ at 42 mph, 10″ for 52 mph, and 8″ for 61 mph. (Ref. 3.)

Maintenance of boiler pressure and water level are the key items determining maximum power of a steam loco. If they drop noticeably, the steam usage rate is exceeding evaporation rate, and cut off should be shortened. In the all out sprint over Macedon, the gauge glass at one-third was the lowest recorded, indicating that the reserve heat capacity of the boiler was being used to help maximum power. The use of this reserve capacity for short periods of very high output, say to make up time, is quite permissible, and many of the old time top drivers were experts in judging just how far to go with the boiler reserve.

The high "spot" power of 2440, or 2580 r.h.p., depending on whether loco speedo at 43 mph, or two train timers over km posts at 45.5 mph, illustrates the spread of results (±7%) the "hand held dynamometer" can give. For this reason, *isolated maximum figures alone should not be quoted as the output of the loco.* Averages of at least 5 readings give more valid results — and for all out running the average of runs above 2200 r.h.p. is 2400, at 15″-18″ cut off.

For the sustained running test sections, the average of 7 figures between 1820 and 2060 = 1890 r.h.p., at

TABLE 1

R761 to Bendigo 4.10.1986 — Dynamometer Run
5 Cars 213 Tons + Loco 180 Tons = 393 Tons Gross

Location Stations and Elevation (ft)	*Distance (miles) Average Grade*	*Speed (mph) Start-Finish** Average*	*Virtual Grade 1 in —*	*Tractive Effort (lbs)*	*Rail h.p.*	*Cut off (inches) Start-Finish*	*Boiler Pressure (psi) Water Level*
St. Albans (224) —Sydenham (347)	3.82 162	37-62 49.9	96	14,100	1870	12-10	210 Full
Sydenham (347) —Diggers Rest (651)	5.43 93	62-54 53.0	106	13,600	1920	10-12	200 ¾
Rupertswood (694) —Clarkefield (1068)	7.00 99	0-55 40.5	77	15,400	1660	18-12	200 Full
Top 1 in 50 26.15m/42km	Loco Speedo	26.0	50	20,400	1420	18-10	200 ½
Clarkefield (1068) —Riddells Creek (1205)	4.02 154	55-64 58.1	122	13,200	2060	10-12	200 ½
Riddells Creek (1205) —Gisborne (1526)	4.54 74			Run spoilt by signal check at Gisborne.			
Gisborne (1526) —Macedon (1656)	3.46 140	32-61 53.2	82	16,000	2260	18-12	195 ½
Macedon (1656) —46½ m.p. (1902)	3.10 67	61-43 48.5	90	14,500	1870	12-18	205 ½
Last 2 km of 1 in 52	2 km	45.5* (timed)	52	21,300	2580†	18	200 ⅓
Kangaroo Flat (839) —Tunnel (1123)	4.20 78	35-47 41.6	70	16,600	1840	10-12	200 ⅔
Last km to Tunnel	1 km 56	46.5 (timed)	56	20,200	2500†	12(?)	190 ½
Castlemaine (918) to Tunnel (1411)	6.40 69	30-39 40.0	66	17,200	1830	12-15	200 ½
Last 2 km to Tunnel exit	2 km 50	39.9 (timed)	50	21,400	2270†	15	200 ⅞
Rupertswood to 46½ m.p. (close to 75 km post)	22.05 96.5	0-43 47.8	91.5	14,300 Sustained run — time adjusted 1 minute faster to allow for signal check at Gisborne.	1820	—	—

*Loco and Dynamometer Car speedo 43 mph = 2440 r.h.p.†.
**Other start and finish speed by speedo readings also.
†Result probably effected by momentum.

TABLE 2
Formula and Power Estimates

$$\text{Average speed from km (or mile) posts and station spacings} = \frac{\text{Length of section x } 60}{\text{time for section in mins.}}$$

mph = km/h x .62 1 mile = 1.61 km.

At the balancing speed — tractive effort = tractive resistance.

$$\text{r.h.p.} = \frac{\text{T.E. (or T.R.) lbs x mph}}{375}$$ same formula for d.b.h.p. — except d.b. pull (lb)

Adjusting for loss or gain in momentum, using velocity head method to obtain virtual grade. Castlemaine to end of tunnel, 6.40 miles, average actual grade 1 in 69, run at average speed of 40.0 mph. Speed through Castlemaine 30 mph, at tunnel exit 39 mph (loco speedo).

Elevation—Tunnel	1411 ft	V.H. 39 mph	53 ft
Elevation—Castlemaine	918 ft	V.H. 30 mph	32 ft
Actual Rise	493 ft	Gain in V.H.	21 ft

Virtual rise 493 + 21 = 514 ft (Above from V.H. (ft) = $.035V^2$)

$$\text{Virtual grade} = \frac{\text{Distance (miles) x } 5280}{\text{Virtual rise (ft)}} = \frac{6.40 \text{ x } 5280}{514} = 1 \text{ in } 66$$

$$\text{Grade resistance (lb/ton)} = \frac{2240}{66} = 34.0$$

Rolling resistance, 40.0 mph ($RR = 5 + .003V^2$) = 9.8 (V = mph)

Total train resistance at gross 393 tons x 43.8 = 17,200 lbs T.R.

$$\text{r.h.p.} = \frac{17{,}200 \text{ (lbs) x } 40.0}{375} = 1830$$

10"-12" cut off, is a good practical working maximum. It agrees well with 1850 r.h.p. for runs recorded during the 1951-1971 life of the R class in regular service. (Ref. 4.)

The sustained output figure of 1890, can be regarded as a sort of "notch 8" equivalent, say something for use in timetable estimating.

The all out peak power — some 25% greater — is a short term reserve which steam power has over diesels — a "notch 9" (or would it be 10?).

This 25% reserve is equivalent to "combat power" in a fighter aircraft, with the afterburner on, and the enemy on your tail! It is very expensive on fuel, in both aircraft and steam locos, and is not for general "flying".

With a hand fired loco, it would be working a good fit fireman beyond his normal physical limit of about 5000 lbs of coal per hour, or a 10 lb shovel full every 7.2 seconds. Because of the poor quality coal being used just after World War II, a stoker was fitted to the R class locos, even though the grate area of 42 square ft was accepted by other railway systems as OK. For handfiring, the British Railways steam loco tests in the 1948-52 period all used 2 firemen for over 4000 lbs/hour maximum power runs and two were used on the NSWR 38 class dynamometer run on 26.6.1966. (Ref. 1.)

References

Ref. 1 "Steam v. Diesel" ARHS Bulletin 348, October 1966.
Ref. 2 "Momentum or Velocity Grades" ARHS Bulletin 347, September 1966.
Ref. 3 "Hudson Power" Chapter 7, Fig. 15 — R M Carlisle and R L Abbott — ARHS 1985.
Ref. 4 "Hudson Power" Chapter 7.

For younger members — the following items may be of interest for those interested in the traction dynamics of locomotives. Table 2 covers typical arithmetic for their own "hand held dynamometer" — all that is needed is a grade book, good watch and a calculator.

"Improvements to Locomotives on the Victorian Railways System" 1936 Thesis by E H Brownbill for M.Mech.E — in Baillieu Library — University of Melbourne.
"Steam Locomotive Performance" ARHS Bulletins 304-307, February-May 1963.
"Estimating the Maximum Power of Steam Locomotives" — ARHS Bulletin 531, January 1982.
"Performance of R761 to Bendigo — Steamrail 8th April 1985" — *Newsrail*, July 1985.
"Locomotive Performance" W F M Goss, USA, 1907.
"The Steam Locomotive" R P Johnson, USA, 1942.
"British Railways Standard Steam Locomotives" — by E S Cox, UK, 1966.

Note: These reference books are in the Victorian State Library, 328 Swanston Street, Melbourne.

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NORTH WILLIAMSTOWN

The Joint Stock Dynamometer Car

With the introduction of modern steam power of greatly increased capacity to the Victorian and South Australian railway systems in the late 1920s the need to accurately determine the performance of locomotives and rollingstock became acute.

To this end the two systems in 1932 introduced a Dynamometer Car to service which incorporated modern dynamometer equipment manufactured by Alfred J Amsler & Co of Switzerland, in a car constructed at Islington Workshops, Adelaide.

The car was one of the last main line vehicles built of wood on a steel underframe and incorporating oldworlde style craftmanship which disappeared a few years later with the introduction of modern-image all steel stock. Its ornate appearance, both inside and outside, is partly due to the fact that the body was built from materials salvaged from old rollingstock involved in the Callington Accident, South Australia. From these bits and pieces, craftmen's skill produced a strong and handsome car to house the valuable testing equipment. The varnished saloon interior with ornate lamps is reminiscent of dining cars of the period. With its rounded roof the Car is relatively short at 16.4 metres weighing 40 tonnes.

The Dynamometer Car is a self-contained testing laboratory capable of recording the performance of all types of rollingstock, from the immense power exerted by a heavy freight locomotive to the friction of the flying wheels of a speeding express train.

The engineer, without the actual tests under service conditions, can only estimate the power of locomotives by calculations. Although the effort exerted by the steam in the cylinders could be measured, the engineer could not tell the actual pull at the tender drawbar. The Dynamometer Car is the link connecting tractor and useful load, showing the effort which can be exerted and the effort required to be exerted. The latter is the train resistance and depends on many factors. The Dynamometer Car facilitates separate measurement of these varying conditions, such as speed, temperature and direction. The accurate knowledge of all these factors enables train working to be more scientifically regulated and produces increased operating efficiency.

The heart of the dynamometer is a hydraulic ram connected to the draw gear at the test end of the car. Buff and pull forces are transmitted hydraulically to a measuring cylinder mounted under the instrument table, and thence to gauges and recording pens on a paper trace.

To calculate drawbar horsepower, the tractive effort obtained from the hydraulic ram is calculated with speed (obtained from an axle drive and a constant speed electric motor) in a mechanical integrator on the instrument table. Inertial forces can be measured from a damped pendulum mounted under the instrument table and these forces integrated with distance travelled, to give the work done by inertia forces. The work done on the drawbar is calculated in a similar manner, with the output of a pendulum driven from the drawbar pull recording apparatus being integrated with distance travelled.

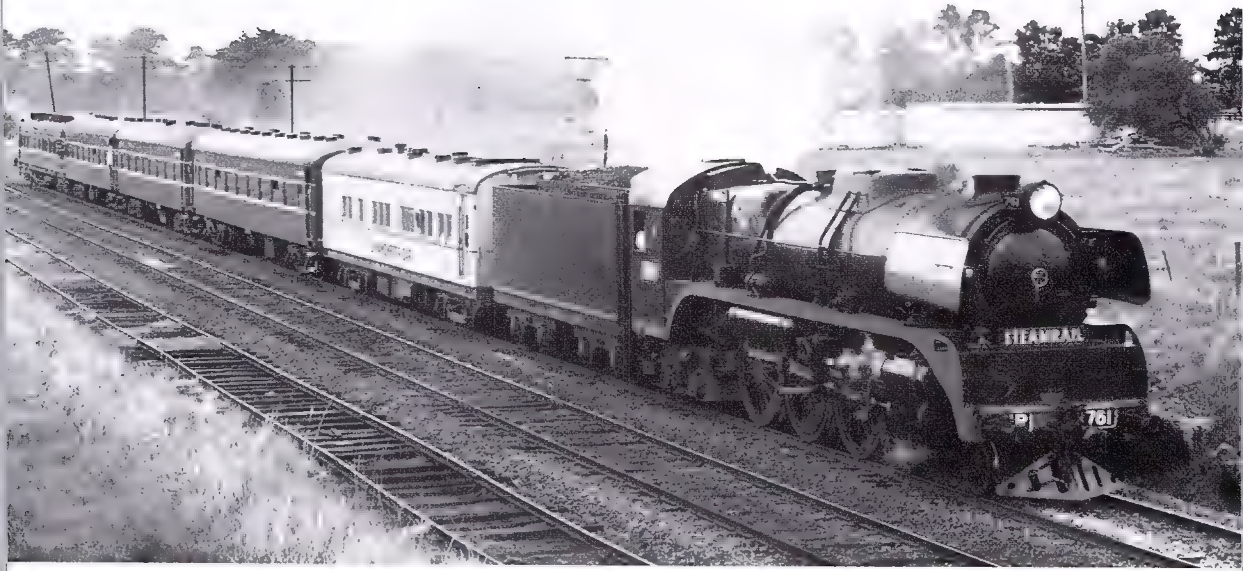
The performance of the air braking system can be evaluated from hydraulic cylinders attached to the brake rigging so that radial and tangential forces acting on the brake blocks are transmitted to recording apparatus on the instrument table. The co-efficient of friction between the brake block and the tyre can then be evaluated by dividing the tangential force by radial force.

All the data thus obtained is recorded, as necessary, on a continuous paper trace for further evaluation. The paper feed can be either time or distance based and the rate of feed can be altered to obtain greater resolution if desired.

Notable test runs with the dynamometer car

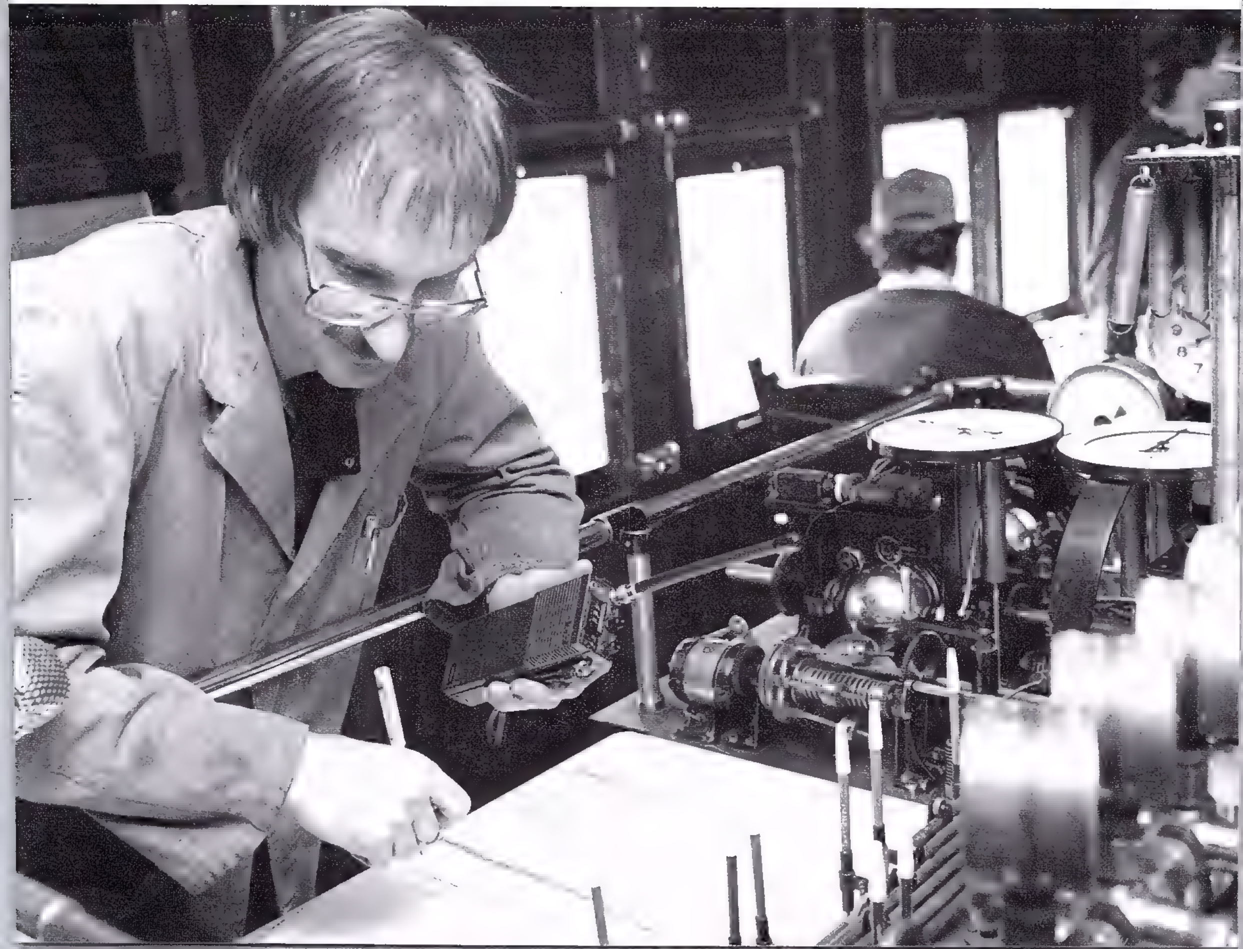
Run No.	*Date*	*Location*	*Loco(s)*	*Tests*
Run 1	16.1.33	Adelaide - Tailem Bend	505B TE	TE
Run 12	1.3.33	Donald - Ouyen goods	D^{2}767	Resistance of IZ trucks
Run 35	5.4.33	Melb. - Albury Exp.	S301	TE
Runs 55-70	3-20.5.33	Melb. - Bendigo and return	C locos	MFE
Runs 224-261	20.3. to 10.5.34	Melb. - Bendigo and return	A^{2}998	MFE
Run 344	5.11.34	Tailem Bend - Waikerie	Rx 277	Loco efficiency
Run 680	29.9.36	Adelaide - Tailem Bend	621	TE
Run 772	17.3.37	Adelaide - Moonta	S131	TE
Run 1304	11.2.41	Wodonga - Melbourne	H220	TE
Run 1390	19.11.43	Adelaide - Terowie	520	TE
Run 1602	13.10.49	Melbourne - Bendigo	X32	PBC
Run 1670	22.3.50	Melbourne - Frankston - Melbourne	M202/407	Speed (elec. train)
Run 1785	6.9.51	Adelaide - Port Pirie	900	TE
Run 1864	12.3.53	Melbourne - Broadmeadows	L1150	TE
Run 2002	27.4.56	Islington - Riverton	800	TE
Run 2056	28.4.53	Newport	M231	TE
Run 2060	4.11.59	Newport	V56	TE
Run 2062	20.1.60	Adelaide - Tailem Bend	830	TE
Run 2287	4.6.84	Bacchus March - Bank Box Loop	A73/C501	TE
Run 2290	22-25.9.84	Ararat - Glenorchy	BL32/X31	TE

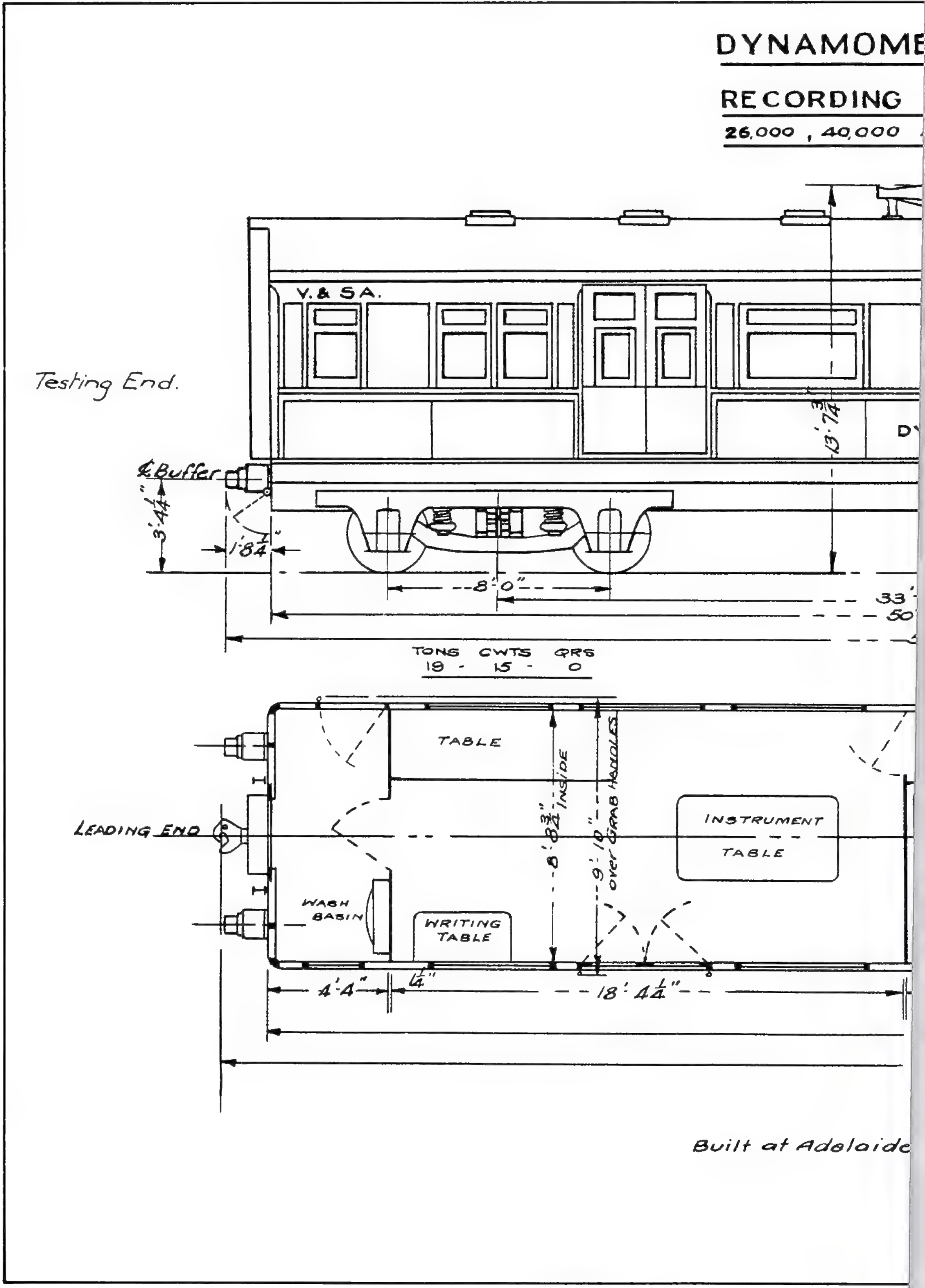
TE — Tractive Effort MFE — Modified Front End PBC — Pulverized Brown Coal



Above: The Dynamometer Car Train steams through Clarkefield on the long grade to Gisborne. (John Dare)

Below: Philip Dunn studies the performance of R761 from the Dynamometer Car during the trip. (George Bambery)

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1' 8¼"
13' 7¾"
8' 0"
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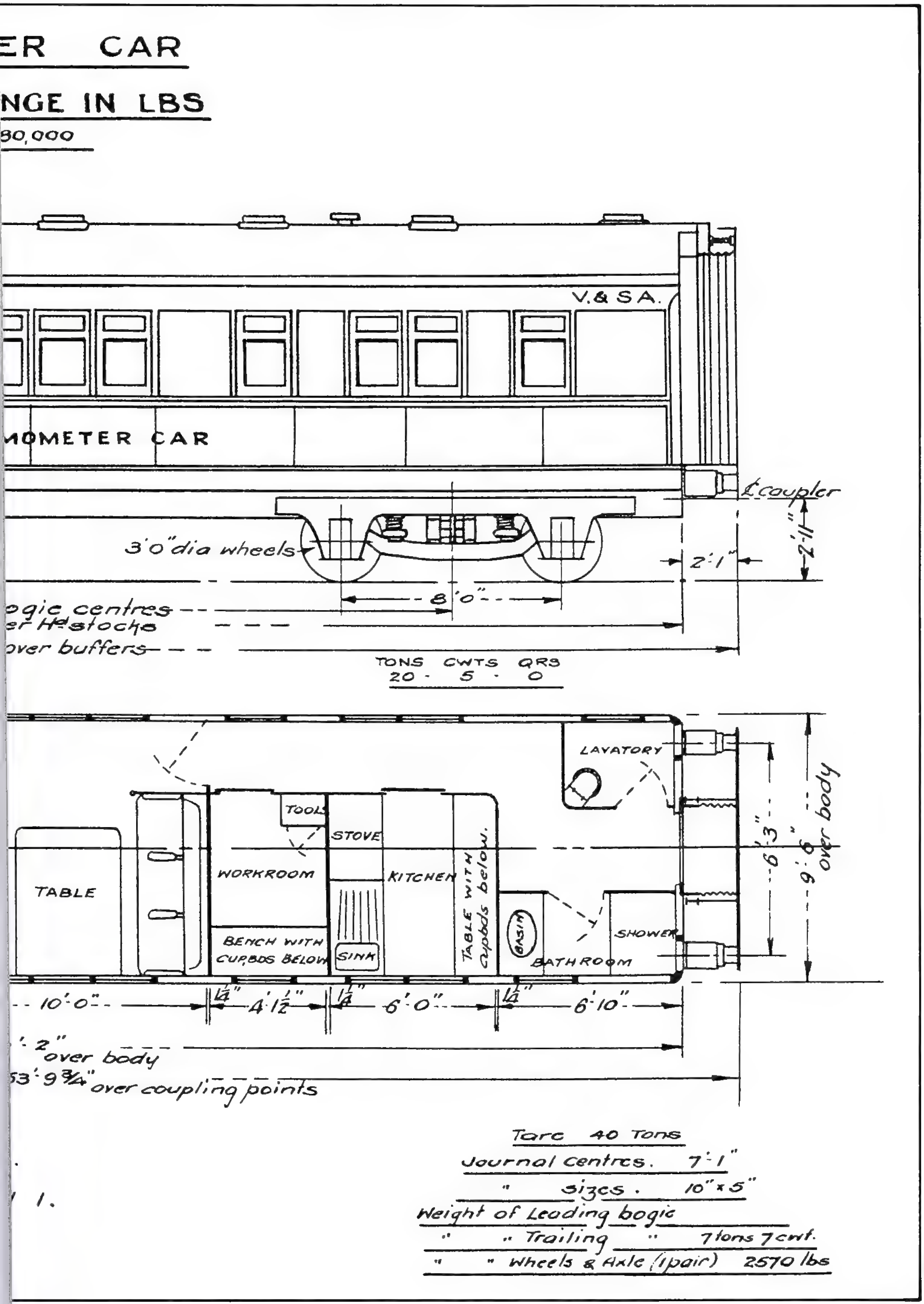
9' 10" over GRAB HANDLES
INSTRUMENT TABLE
WASH BASIN
WRITING TABLE
4' 4"
1¼"
18' 4¼"
Built at Adelaide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TOOLS
STOVE
WORKROOM
KITCHEN
TABLE WITH cupbds below.
TABLE
BENCH WITH CUPBDS BELOW
SINK
BASIN
SHOWER
BATHROOM
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9'6" over body
10'0"
1/4"
4'1 1/2"
1/4"
6'0"
1/4"
6'10"
' 2" over body
53' 9 3/4" over coupling points
Tare 40 Tons
Journal centres. 7'1"
" sizes. 10" x 5"
Weight of Leading bogie
" " Trailing " 7 tons 7 cwt.
" " Wheels & Axle (1 pair) 2570 lbs
1.

General News

Tallarook - Yea preservation: Rail enthusiasts keen to lease the Tallarook - Yea railway line will make another submission to the Ministry of Transport after talking to the Premier Mr Cain. The Tallarook - Yea Tourist Preservation Society was told late last year that its seven year bid to re-open the line had failed.

Members of the society took the matter up with the Premier when he was in Seymour for a race meeting recently and were invited to make another submission to lease the line. The Premier was said to be keen to see the line re-opened. If successful work will begin to raise the estimated $300,000 needed to restore the line. This will be sought from corporate and business sponsors. (PF)

Tavern opens: The official opening of the new bar and lounge, the first stage of the $500,000 Spencer Street station upgrade to reach completion, was celebrated with suitable aplomb. The new facility will provide a place for V/Line passengers to sit in comfort and enjoy a drink while waiting for services to arrive or depart.

The shutters of the new bar were raised for the first time a couple of days before Christmas by Len Harper, General Manager, Passenger Services Division. Len was enthusiastic about the opening. "It gives this area a glowing look. It is the start of a new image for us, and I want to thank everyone involved — they all deserve a beer", said Len, taking on the role of bartender to pour the first beer for John Beaumont, works foreman on the project. (*V/Line Update*)

Costly Jolimont move: Clearing the Jolimont railyards to make way for development is expected to cost close to $200 million — double the State Government's original estimate. The Ministry for Transport said last year that nearly $100 million would be spent on the construction of maintenance depots at Epping, Newport, Nunawading and Oakleigh and sheds at Mordialloc, Sunshine and Werribee.

According to railway union officials, however, the Government has underestimated the cost of the move. An independent British transport consultant. "Transmark", and the unions estimate that the project is more likely to cost $175 million plus.

The Government will have to get the costing right because it plans to offset the expense of the move by selling the land to private developers. The Government's original cost estimates for a new depot at Epping have also been revised. (*Age*, IBB)

Echuca Port line: Echuca has submitted a proposal to the bicentennial authority to re-open a section of line from the Echuca railway station to the historic port area as Echuca's bicentennial project. The project has received backing from V/Line's engineers and Murray Tourism. Estimated cost of the project is $37,000, with the use of voluntary labour from local service clubs. (FS)

Rocking the suburban rails: On Sun.25.1, as part of the Australia Day celebrations the bands "Paul Kelly and The Coloured Girls" along with "Geisha" performed at the following stations: Flinders St, Lalor, Heidelberg, Laverton, Hawthorn, Oakleigh and Caulfield. The bands used a flat top for their stage at each stop. The train consist was T412-1BCE-VQDW12C-*Goulburn*-VOCX442F. (JG)

Rocking the country rails: On Sat.31.1 and Sun.1.2, the Bureau of Youth Affairs ran a "Rocking on the Rails" excursion to Geelong, Ballarat, Maryborough, Castlemaine, Bendigo and Sunbury. The train consist was B76-VOCX 442F-*Norman*-208BS-VQDW 12C-*Goulburn*-2CD. At Castlemaine, the special arrived in platform 3 and then shunted to platform 2 to enable the concert stage (VQDW) to adjoin the platform for the performance. On arrival at Sunbury platform 1 the special pushed back onto the Down line to arrive at platform 2 for the performance. After the performance the train then pushed back and departed via the 1A track to the Up line. (JG, AC)

8167 idles in Sunshine Loop with an early morning Up Albury goods as G521 and C502 pass by with the 04 30 Up Ararat express goods. Sun.30.11.86. (John Dare)

Traffic

WOLSELEY LINE & BRANCHES

Depot visits: (all Ararat)

Sun.4.1: B74, G525, S317, T363, 369, 370, 374, 375, 377, 378, 382, 406, 412, X44, Y151, 156, 157, 159.

Sun.11.1: C501, G513, 514, 515, S309, T354, 356, 370, 374, 375, 378, 379, 382, 390, 406, 412, X44, Y156, 157.

Sun.18.1: C506, G511, 514, S307, T356, 363, 369, 374, 375, 379, 382, 388, 396, 397, 406, Y156, 157.

Sun.25.1: G515, 521, S309, T362, 366, 370, 374, 375, 379, 382, 388, 396, 406, Y157, 158, 171. (PJM)

New train: As expected, the new working timetable to take effect from Sun.15.2 shows a new daylight service to Mildura three times a week. The train, named the *Sunraysia* will operate in both directions on a Mon., Tues. and Wed. departing Melbourne at 08 30 and arriving in Mildura at 17 10. The *Vinelander* has been retained for three days namely Thurs. Fri. and Sun. There is no mention of the availability of motorail. (CR)

Big trains — little trains: The trend in the west is certainly toward fewer trains, generally bigger. However some oddities still appear. Some observations at Stawell follow: Mon. 29.12 G514-G525-G521 Down goods 2=4 at 11 47; Wed.31.12 G513-X49-X46 Up grain 50=100 at 08 56; Fri.2.1 G515-T363 Up grain 27=54 at 08 27; Mon.5.1 G523-X44-T412 Down goods 5=9 at 12 51; Tues.6.1 C506-C507-C501 Up Jet 31=83 at 07 10: G523-X45-T370 Up grain 48=96 at 09 35; Tues.13.1 G511-947 Down goods 7=16 at 10 00; Tues.20.1 C508 Up goods 17=24 at 17 50 (Sleeper No 8 *Inman* was in the consist); Wed.28.1 T350-T356-Y155-T365(dead) Up goods 29=55 at 18 56 (RT18 was in the consist); T385 Down Jet 12=36 at 19 11; C501-C504 Down Jet 36=95 at 19 50. (PJM)

Dimboola pass: Almost no S class locos for a whole month! This reflects recent changes in locos used on the Dimboola pass. The morning Down and afternoon Up is almost always an N or A class with a very occasional X class.

The morning Up and the evening Down which were almost always an S class roster were lately handed to X class. Most unusually an A class was rostered on one occasion. January's sightings were as follows: 29.12 X50; 30.12 to 5.1 X48; 6.1 and 7.1 X54; 8.1 X48; 9.1 N456; 10.1 S310; 12.1 X52; 13.1 to 19.1 X48; 20.1 A66; 21.1 to 23.1 X49; 24.1 X44; 26.1 X46; 27.1 X44; 28.1 X50-X44; 29.1 X44. (PJM)

BENDIGO - SWAN HILL LINE BRANCHES

Silo outloading: The Grain Elevators Board have recently called tenders for the outloading of the following silos — Wakool, Caldwell, Bunnaloo, Womboota, Mathoura, Diggora West, Hunter and Rochester. Road transport will be used in all cases. (FS)

Big power returns to Echuca: After many months of Y class, domination Tues.20.1 saw the return to Echuca of main line power when S311-S300 (tail to tail) were noted at Rochester at 18 35 on an Up grain from Echuca consisting of 41 GHs. On Wed.21.1, B64-T389 left Echuca on an Up train at 16 45. On Fri.23.1, B64 and T389 were again noted in the yard at Echuca prior to departure on an Up goods. G521 with 20 containers, 37 GHs left on an Up goods at 15 38 on Fri.6.2 whilst on Mon.9.2 G515 accompanied by a B class left on an Up goods at 16 47. (FS)

T locos class cross the Murray: Certain T class locos are now permitted to cross the Echuca - Moama road rail bridge over the Murray River. Units approved for this working include T392, T391, and T386 and are stencilled E under the number plates on the cab. (JG)

Big motive power: On Sat.21.2 the block gypsum working ex Maryborough arrived at Ballarat with B63-T359-S300-T365-X36-B84 at 11 36. The first four locos were detached and proceeded to Ballarat Loco whilst X36-B84 continued on to Geelong. The train consisted entirely of 4-wheeled wagons. (JG)

N455 City of Swan Hill: On Sat.21.2, train 8061 arrived in Swan Hill as a double N set hauled by N455 and N459.

The following morning, with N455 on the Down end and N459 at the Up end a series of promotional trips were run to Lake Boga and Woorinen. These continued until the early afternoon when the Acting Mayor of Swan Hill Cr Gillian Day proclaimed N455 *City of Swan Hill* after which the official party were entertained by V/Line in one of the ACN cars as the train did a round trip north to Woorinen then back through Swan Hill to Lake Boga and return.

This was completed in time for the train to be prepared to run the 16 55 Up (8088). N455 was run round the train and left as leading engine.

Over 2,500 people were the guests of V/Line on the promotional trips, these included an octogenarian who recalled free trips given 70 years ago when the line north of Swan Hill was opened. On that occasion school children were accomodated on seats placed in the trucks used to transport bagged grain and were given a free ride to Nyah West and return.

Train 8081 the Down Sunday service from Melbourne hauled by N466 and B76 drew into Swan Hill at 14 05 (five early). The detraining passengers may have been surprised to see the augmented Swan Hill Technical School Band playing on the platform and an abnormally large number of people on the platform awaiting the arrival of the promotional train and the naming ceremony. This train was returning from Woorinen and was held at the Up home signal, while 8081 was placed in No.2 road to form 8038 Up the following morning. (AF)

ALBURY LINE & BRANCHES

Shepparton area news: It has been noticed that CO-CO motive power has started making regular appearances again on goods trains throughout the Shepparton area. First observed was B65 VR on Wed.10.12.86, running No.9313 Down goods arriving Shepparton 17 20. The loco later made up No.9332 Up goods along with Y119 V/Line departing at 20 55. The loco was also noted Thurs.11.12 on an Up goods. It was unusual to see this rare loco twice in one week. Mon.15.12, B69 V/Line was noted stationed No.3 road preparing for the Up departure of the Shepparton evening goods. Wed.17.12, X36 VR and T376 VR were sighted on the Up goods that evening. This is the first X I have noted hauling a goods on this particular section. Fri.19.12, twin X class locos Nos. X36 VR and X37 VR were on the Up goods. The train departed at 21 35.

Mon.22.12, X37 coupled T385 VR were noted at 07 38 in No.4 road Shepparton yard. Tues.23.12, B63 was noted on the Up evening goods. Wed.24.12, X44 V/Line was observed on shunting duties in the Shepparton yard during the early afternoon.

A trip over to Kyabram in the early evening was well worthwhile as I noted S306 V/Line with T392 V/Line leading, stationed in No.2 road preparing for departure with a small rake of GYs. It is very rare to see double-heading let alone CO-CO motive power on this 80 lb line. The train departed at 18 40. I was told by an employee that since trains run only to Kyabram and return via Seymour this type of working has been common.

The locomotives listed below ran trains to and from Shepparton for the months of November and December 1986:

November:

Passenger trains — X31 VR, X32 V/Line, X36 VR, X42 VR, X44 V/Line + A70, A77, A79, A81 + N452, N454, N457, N458, N460, N462, N463 + B80 V/Line, B84 V/Line, RM58 ARHS special. *Goods trains* — T350 V/Line, T354 V/Line, T369 VR, T374 VR, T375 VR, T378 VR, T382 VR, T387 V/Line, T388 VR, T396 VR, T407 V/Line, Y175, Y168 V/Line pilots.

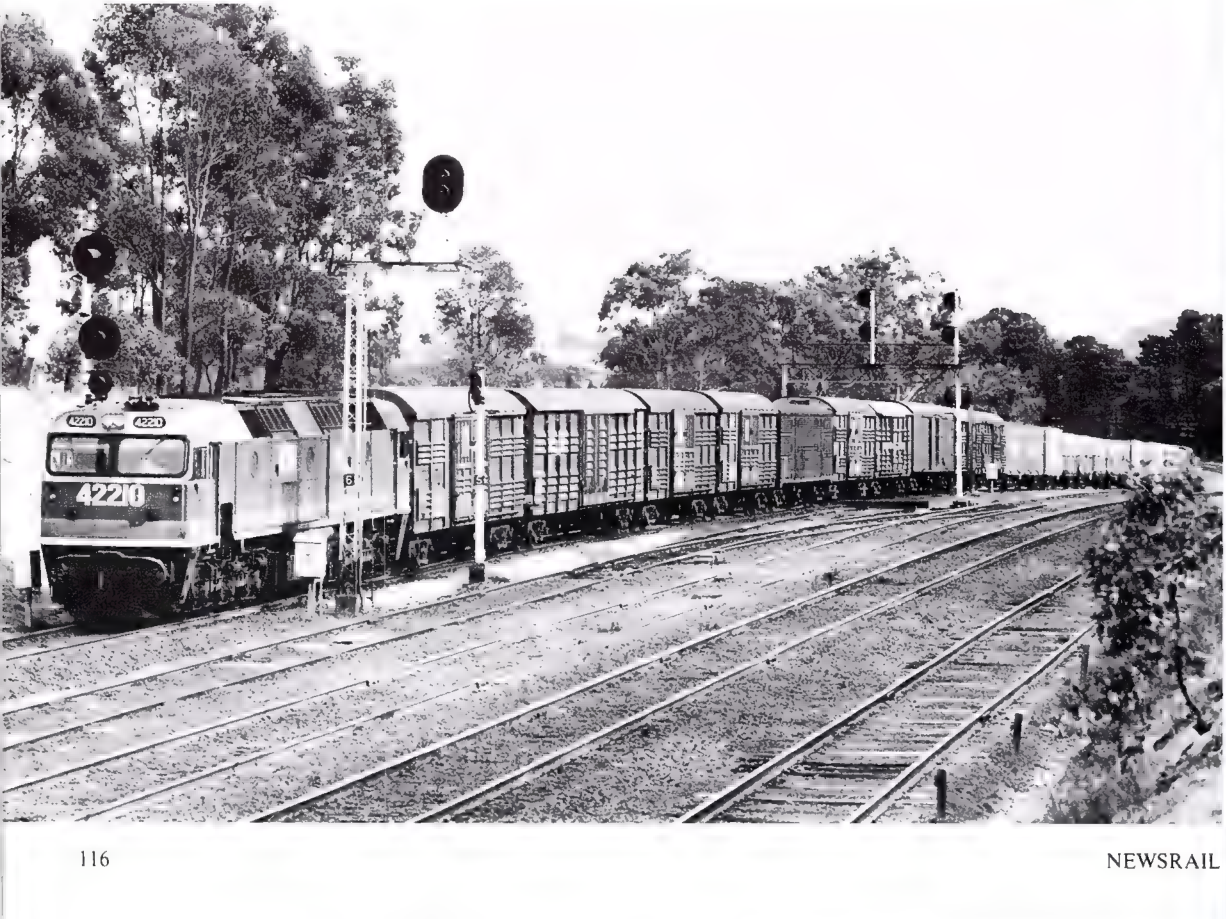
December:

Passenger trains — A66, A70, A79, A81 + N455, N458, N461, N462, N467. *Goods trains* — T349 VR, T363 V/Line, T365 VR, T372 V/Line, T376 VR, T383 V/Line, T385 VR, T388 VR, T389 V/Line, T400 VR, T404 V/Line T410, T412 V/Line + B63 V/Line, B65 VR, B69 V/Line + X34 V/Line, X36 VR, X37 VR, X44 V/Line + Y119 V/Line, Y143 V/Line, Y168 V/Line. (MT)

Test run: On Mon.16.2, N470 operated to Longwood for testing purposes from Clyde's plant at Somerton. At both Mangalore and Avenel the Auto staff exchanger was utilised for the testing of the loco's Auto staff exchanger. The loco was required to travel at the maximum permissible speed during these tests. (PF)

Busy Mangalore triple cross: On Tues.27.1, at Mangalore a rare but not unusual triple cross took place. First to arrive was T390 on an Up Tocumwal goods at 20 18. At 20 21 X38-T375 Down block grain arrived. Shortly after T398 on the Up Wodonga block oil passed through. T390 on the Up Tocumwal waited for line clear and finally moved off at 20 35. X38-T375 then proceeded to Longwood where it was again involved in crossing other movements. First to arrive at Longwood was X33 with an Up block grain and then waited for 9334 steel train. (PF)

42210 heads a Sydney bound goods train at Broadford Loop. Fri.17.5.85. (Adrian Rynberk)



EASTERN LINE & BRANCHES

Loco changes at Trafalgar: During January most trains were run by N locos, but there was a regular roster for three Ls a day. Towards the end of regular electric operation on passenger services the Ls would occasionally appear on services which were normally diesel-hauled. Double-headed Ls ran from time to time on the 13 47 Down Traralgon.

The new service from 15.2 was the date set for all-diesel passenger operation. The last electric passenger was the 10 00 Up Traralgon with L1156 on Sat.14.2. A number of enthusiasts made various journeys by this train and the earlier Warragul - Dandenong - Traralgon services run by the same set.

Because of load limits on bridges, only T locos have been permitted beyond Traralgon for some time (the Avon River bridge at Stratford is not the only bridge involved). The new Sale train was to run with an N between Melbourne and Traralgon and a T beyond. At the last minute, permission was obtained for one trip a day to operate with a main line engine as far as Sale, subject to some speed restrictions. An N is subject to seven restrictions, but an X only three, so since Wed.18.2 the Sale train has been run by Xs. This has resulted in a number of other services using Xs to balance, and some deterioration in punctuality since the schedules are based on N locos. (SRMcL)

New service — trains: Although there are critics who believe the new service is worse than the old, none would have expected it to run so badly in the first week of operation. The 15 43 Down Traralgon, a train which ran quite punctually in the past, and which has an unaltered schedule, amassed a total of 132 minutes late running for the week. On Mon.16.2 it arrived at Trafalgar 16 late; on Tuesday it departed Spencer St 15 late and lost over half an hour at Caulfield with defective cars; on Wednesday it reached Trafalgar 29 late following a signal failure at Pakenham; on Thursday it was 17 late at Trafalgar behind an A loco; on Friday it was 20 late at Warragul, following a level-crossing accident at Nar-Nar-Goon earlier in the afternoon. The next week it was 5 and 12 late at Trafalgar on Mon. and Tues.

Tuesday 17.2 was a bad day. As already mentioned the 15 43 was 50 late by Warragul; it was overtaken by the 16 27 Warragul suburban while the cars were being attended to at Caulfield. The same day the afternoon Sale train was replaced by buses due to a shortage of cars. With the Sale train cancelled and little room for vangoods on the suburban trains, there was a backlog of 25 trolleys of parcels at Spencer St; a road truck was used to convey some parcels and it broke down on the way.

The Sale train, which uses an N set, has been sighted with no D van (Mon.16.2), one D van (Fri.20.2) and two D vans (Tues.24.2). It is usually 3-4 minutes late at Trafalgar on the Up, but on Thurs.19.2 it was 18 late, and on Tues.24.2 6 late after stopping at a defective signal.

For the first four days of the new service, most Bairnsdale trains ran with N sets, but this was the result of a serious car shortage in Melbourne, not a change to the carriage roster. The *Gippslander* on Saturday is now regularly an N set; these cars also run the 18 05 Down Bairnsdale Sat. and the 17 15 Up on Sunday.

The Warragul suburbans are three-car Comeng sets in original condition (they don't even have Warragul destination boards). It appears that the sets are captive to Warragul services, as they don't form other services in Melbourne. Following the Nar-Nar-Goon accident, a third three-car set was used to maintain the service. (SRMcL)

New services — buses: In addition to the bus services shown in the February 15 public timetable and the handout timetable leaflets, there is also a Mon. to Fri. service from Warragul to Traralgon at 06 10. This service was put on at short notice following complaints from the regular passengers on the 04 40 Down Traralgon when they learnt their train was going to be cancelled; the bus is actually carrying a few more passengers than the train used to. On arrival at Traralgon this bus departs at 07 20 back to Warragul, allowing passengers from intermediate locations to commute to Warragul, or to change there into the Up Bairnsdale train.

All the bus services make stops at Nilma, Darnum, Trafalgar East, Mid-Valley Shopping Centre (between Morwell and Traralgon) and Traralgon Hospital in addition to the stops shown in the published timetables.

On the Down journeys, the buses call at the stations at Yarragon and Trafalgar; on the Up it was not thought desirable to cross the Princes Hwy twice in each town, and the site of a suitable stop was a matter of much discussion between V/Line and the local council. At present the council has had its way, and the bus stops are located at the western end of each town (unusually they are farther from the centre of the shopping centres than the station), but V/Line is treating these stops as interim and has done nothing except put up a sign.

The bus service has now been published (or amended) in at least nine different working or public documents, not one of which shows all services and all stopping points correctly. The only public mention of where Up buses stop in Trafalgar has been in the report of the council discussion in the *Trafalgar News.* On the first day of bus operation, three passengers who were waiting under a bus stop sign at Trafalgar station were left behind.

The 16 36 Traralgon - Warragul bus conveys 20-25 passengers, most of whom are making local commuting journeys. During the first week a few passengers who had travelled from locations east of Trafalgar appeared to connect into trains at Warragul, which seems a little strange. The bus used is the same style as the bus formerly used between Traralgon and Sale (maybe the same bus). It is operated by Latrobe Valley Bus Lines and garaged in Drouin; it has no toilet. One man runs the whole service (quite a long day) except for the Friday night trip Warragul - Traralgon which is operated by a Traralgon-based bus which has run Up empty.

The Gippsland Transport Study has identified needs for services other than those currently provided, and additional bus services are expected to be introduced during the currency of the rail timetable. Some rationalisation may also be expected: at present passengers from Moe to Trafalgar East and Trafalgar have a choice of a V/Line bus at 17 08 or a Latrobe Valley service at 17 10! (SRMcL)

Weekend trains: On Sun.8.2, the 09 20 Down Bairnsdale reached Trafalgar 5 minutes late at 11 22 behind N-X locos. From 15.2 the time at Dandenong for the crew change with the 08 10 Up Traralgon was extended from 3 to 5 minutes, and the train is now due Trafalgar at 11 19. On the next two Sundays it reached Trafalgar at 11 23 (N loco) but on both days the earlier Up Traralgon had been late (8 late on 15.2, 19 late on 22.2), so the Down train had run quite well. The second Up Bairnsdale train on Sundays continues to stop at Trafalgar occasionally, at 19 48 (13 late) on 1.2 and on time on 15.2.

Trafalgar's other unpunctual weekend train, the 17 15 Down Traralgon on Saturdays, has also been slowed slightly. It now makes the crew change with the Up train at Pakenham instead of Dandenong, and leaves there 2 minutes later than before; three minutes extra are allowed in the schedule for T class operation. On Sat.21.2, T391-T410 left Pakenham 2 minutes late and reached Trafalgar 3 minutes late, and it would seem that the schedule is now correct. (SRMcL)

Three tallies: On Fri.6.2, the 17 50 Down Traralgon conveyed 50 passengers east of Yarragon. This train is replaced in the new timetable by a 45-seater bus. On the same night, the 18 40 Up Traralgon had 40 passengers between Moe and Yarragon. This service has been cancelled altogether. On Sat.14.2, the 06 05 Warragul - Dandenong conveyed 3 passengers between Warragul and Pakenham. This service is retained in the new timetable. (SRMcL)

L class take the goods: Twice, during the week beginning Mon.9.2, 9459 goods ex Port Melbourne was hauled by quadruple L class locos. Wed.11.2 saw L1150-1174-1165-1172 depart at 17 38. Fri.13.2 saw L1150-1174-1158-1162-5xG-8xVFNX-2xVLCX as the load departing at 18 38. And on the pass. — Fri.13.2 the Up *Gippslander* consist was L1169-D343-N4 and the 15 43 Traralgon consist was L1172 N19-D358. (JG)

SUBURBAN LINES

Sunshine observations: 15 hours of observations at Sunshine on Thurs.15.1 presented some interesting aspects of current working. Some points worth noting were:

Only one B class and no S class locos were sighted during the time spent at trackside. Passenger trains on the broad gauge were mainly A, N, P or X hauled. Blue cars are rare — only the ex SAR set was noted.

P and N class locos are creeping into goods traffic — some sightings: P17 was noted on a Down goods largely consisting of VOWA sleeper wagons at 09 51. N465 and X40 ran a Down goods at 19 33. N456 and X44 ran a double oil consist on the Down at 20 23.

The only B seen for the day was combined with a T and ran a Down goods consisting of empty flats at 20 32. B69 and T364 were the locos. (PJM)

Spencer St sightings: Thurs.29.1 saw 934-N469-210BS depart from adjacent to platform 2 enroute to Newport workshops. 934 was to receive a wheel lathe treatment, N469 was to be weighed and 210BS was to have collision damage repaired. Later that day N469 returned to Spencer St with dining car *Murray*. (JG)

Sunshine observations: At 10 30 on Fri.9.1 a T class departed Sunshine for the north-east hauling loading plus 4BCE, 36BE and two L sheep vans with the BE lettered Seymour SPSC.

At 16 50 on Tues.13.1 a G class departed Sunshine hauling 20 NODY as a block loading (refer Jan. *Newsrail* p.53).

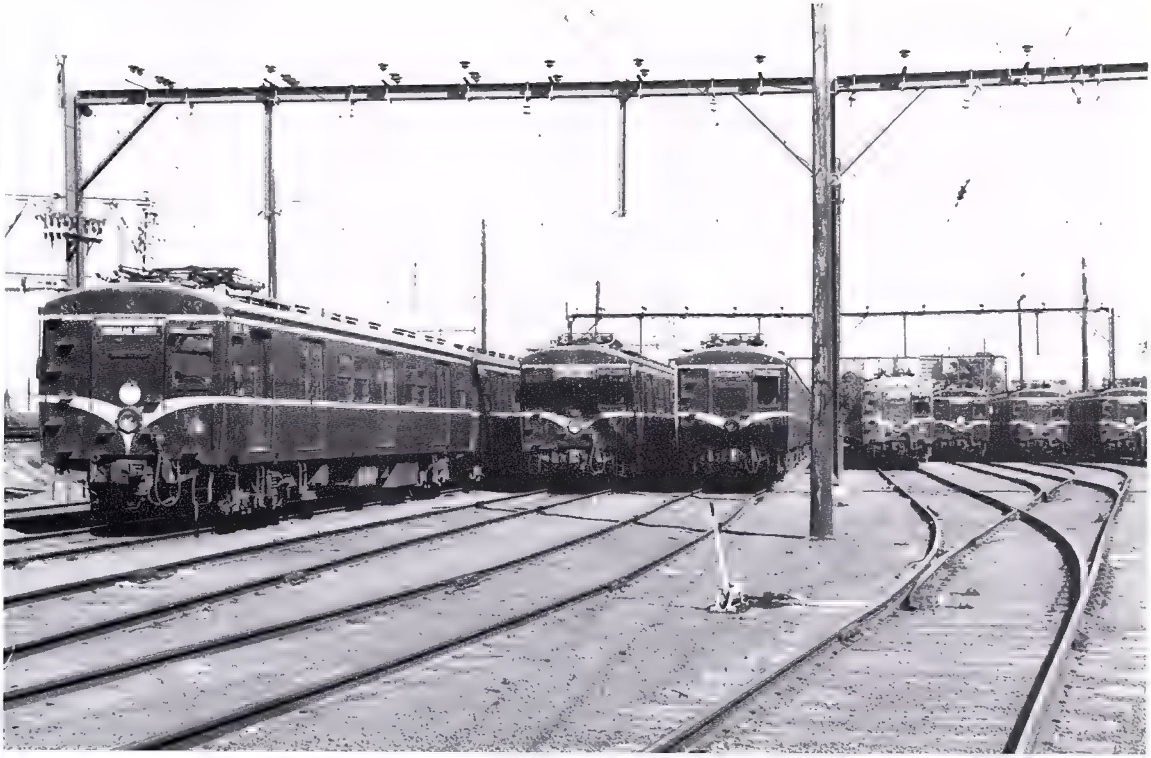
On the same evening at 22 00 on the Up, A77? hauled 11 container flats with 22 workmen's huts on them at about 80 km/h through Sunshine. Gone are the days of workmen's trains crawling along at 40 km/h with their mixture of ancient 4 and 6-wheel sleepers.

The Adelaide superfreighter on Fri.30.1 departed Sunshine at 19 03 with X45, 967, 9 AQSY and 10 V(A)QDWs. The train was fully loaded with only one container space not filled. (WJ)

Long Island opening: The official opening of the BHP slab steel siding took place on Fri.20.2. A special train conveying Transport Minister Mr Roper and several VIP guests ran with N470-*Norman*-1RBJ-2PCO arriving at Long Island Junction at 11 10. G524 was noted at Long Island with 16 loaded slab wagons. (JG, HG)

Long Island timetable: The new working timetable released on Sun.15.2, shows three Up and three Down trains Mon. to Fri. and two trains each way on a Sat. (HG)

42214 and X41 climb upgrade to Heathcote Junction with the 16 30 Down Albury goods. Sun.23.2.86. (John Dare)



HARRIS CARS

With less than 35 Harris sets in service, seven sets at North Melbourne is becoming a rare sight. Tues.30.12.86. (V Greensill)

Withdrawn Harris Cars sink into the mud in a South Clayton sludge pit. Tues.10.2.87. (Ian Stanley)

Rollingstock

Locos in mothballs: As at Mon.16.2 the following locomotives are stored: B67, B68, B72, F201, F211, L1151, L1152, L1153, L1154, L1155, L1158, L1167, L1168, L1170, L1171, L1173, S305, T320, T321, T322, T323, T324, T325, T333, T334, T335, T341, T343, T346, W267, — total 31. Anyone interested in the total power is welcome to work it out. Please send in your answer. (JG)

L class demise: With L class working restricted to goods only it is interesting to reflect on the demise of the class. Following are some of the incidents that have taken place over the last few years. L1154 was hauled dead behind L1166 and L1169 on the 09 20 Bairnsdale on Sun.5.10 returning to Melbourne the next day with 9412 goods when it failed. On its return it was sent to Dynon and was officially withdrawn on Fri.14.1.86 along with L1168, L1158 and L1171.

L1151 and L1153 are both at Newport workshops, L1151 has been there since 1981. Other L class to spend long periods at Newport are L1156, L1162 and L1174. Both L1151 and L1153 are now stored. L1164 was involved in a collison in 1984 and was towed to Newport where it remained until cut up in 1985.

L1169 was involved in a collision with a semi-trailer in 1985, its nose received severe damage so it received the nose from the cut up L1164 and returned to duty in V/Line colours.

L1163 derailed at Drouin in 1985 and is at Newport. L1163 and L1164 are the only two of the class to be scrapped (as at 14.6.86). L1173, L1167, L1155, L1152 and L1157 are also stored. (JG)

"Save an L"!: With the proposed withdrawal of all L class main line electric locmotives by early July a group of interested persons, mainly railway employees made representations during February to the Department for one of the class to be retained for preservation in operating condition. The Ls have become surplus due to the "dieselisation" of the Gippsland line beyond Warragul. Further details will be published when negotiations are resolved. (POT)

VHGYs: Ballarat workshops has just completed constructing 100 VHGYs and are now continuing with a further 100. when these are completed V/Line expects to have enough bogie hopper wagons to handle all grain requirements leaving the 4-wheeled GYs and GHs redundant. In fact for the current harvest no GYs are scheduled for use for grain transport.

Interesting to note is that on completion of the new bridge at Echuca (started Feb.87) and the relaying or closure of all light lines there will be no grain silos that cannot be accessed by bogie grain hoppers as it is strongly rumoured that all 4-wheeled wagons will be out of use by 1988/89 with the possible exception of works vehicles.

As at 30.6.86, there were 6536 4-wheeled wagons on V/Line's register of which over half were in storage and 4888 bogie wagons are on the books. The VOWA wooden sided bogie wagons are still to be used around the system, mainly on works trains carrying sleepers and lineside rubbish but they are being used less these days and are expected to be withdrawn in the near future.

X42 heads the K set through Footscray on a Down Bacchus Marsh pass. Thurs.15.1.87. (John Buckland)

The VBAK - VBAY-VLBY type bogie wagons are mainly in storage these days and are likely only to see future service as passenger D vans conversions. V/Line has started a program to convert another thirty of these vans to D type vans (D355 one of the new vans was noted on the 17 44 Swan Hill on Fri.5.12). These new vans have "super service" bogies fitted to them which look very similar to the standard 3-piece freight bogies. (BL)

G class: The route availability of G class locos on the Victorian rail network is slowly increasing, Gs are now permitted to run on the following lines: Portland - Yaapeet - Hopetoun, Ararat - Maryborough - Castlemaine - Bendigo - Inglewood, Bendigo - Echuca, Bendigo - Piangil, Geelong - Ballarat - Maryborough - Mildura and from Dunolly to Manangatang and Kulwin, also on the Pinnaroo line. Gs also run on the standard gauge right through to Sydney and from Melbourne to Adelaide via the Bacchus Marsh, Meredith and Cressy lines, they also run in the Melbourne metro area on trains such as the Apex quarry train and Long Island steel train.

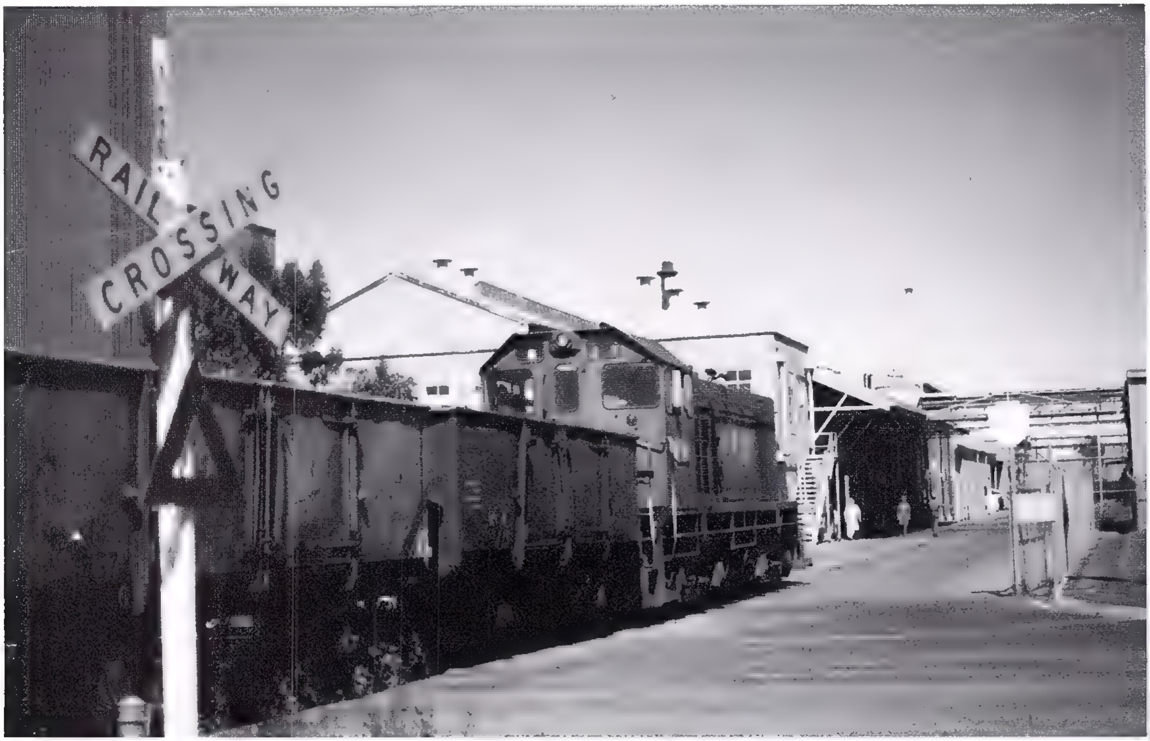
This big power is certainly needed for the long heavy grain movements V/Line now handle. Trains of up to 50 bogies/3800 tonnes now operate into Portland and into Geelong trains of up to 42 bogies/3200 tonnes are being handled. With more work expected to be carried out on the Geelong - Mildura line with longer loops and the possible installation of a modern safeworking system which may include a system of signal control but without track circuitry, we may even see longer trains operating over this line. (BL)

Tait era ends: Withdrawal of double-ended motors, 1470M and 1471M on Mon.5.1, brought to an end the regular m.u. operation of Tait electric rollingstock. A year earlier, 1470M and 1471M had replaced 456M and 461M when one of the latter became defective on the overhead lubrication train which is now to be hauled by two Harris M cars. Although the centre vehicle which actually lubricates the overhead wire with a special grease pumped through its pantograph, is Tait 447M, it is a non-powered car and cannot be operated on its own. 447M holds the distinction of being the only airconditioned Tait on rails (for the comfort of the lubricating equipment operations) whereas there are at least 7 airconditioned-Taits leading a new life as restaurants. The original motive power for the overhead lubrication train, 456M and 461M which have remained out of service at Jolimont Yard for 12 months are to be transferred to Newport Workshops for disposal. 1470M and 1471M are being retained for a period for use on ethusiasts trips pending eventual allocation to ElecRail and the ARHS-V Railway Museum, respectively. (POT)

Blues on OHL train: Harris motors, 774M and 778M were scheduled to undergo tests on the overhead lubrication train during the week ended 21.2. These two non-asbestos Harris motors supersede two generations of Tait M cars on this department duty which covered all the electrified area including Traralgon. Before the Harris motors could be attached to the depowered Tait 447M, the latter's screw couplings were removed and replaced with a centre draw-bar compatible with that of Harris stock together with a wide buffing plate. (POT)

Taits to the rescue: The marriage between Harris and Tait rollingstock on the overhead lubrication train proved incompatible and resulted in a forced temporary separation. Following test runs, crews expressed dissatisfaction with sight problems and braking. Consequently, 794M and 797M have been replaced by the Tait double-enders while the Harris teething problems are resolved. (POT)

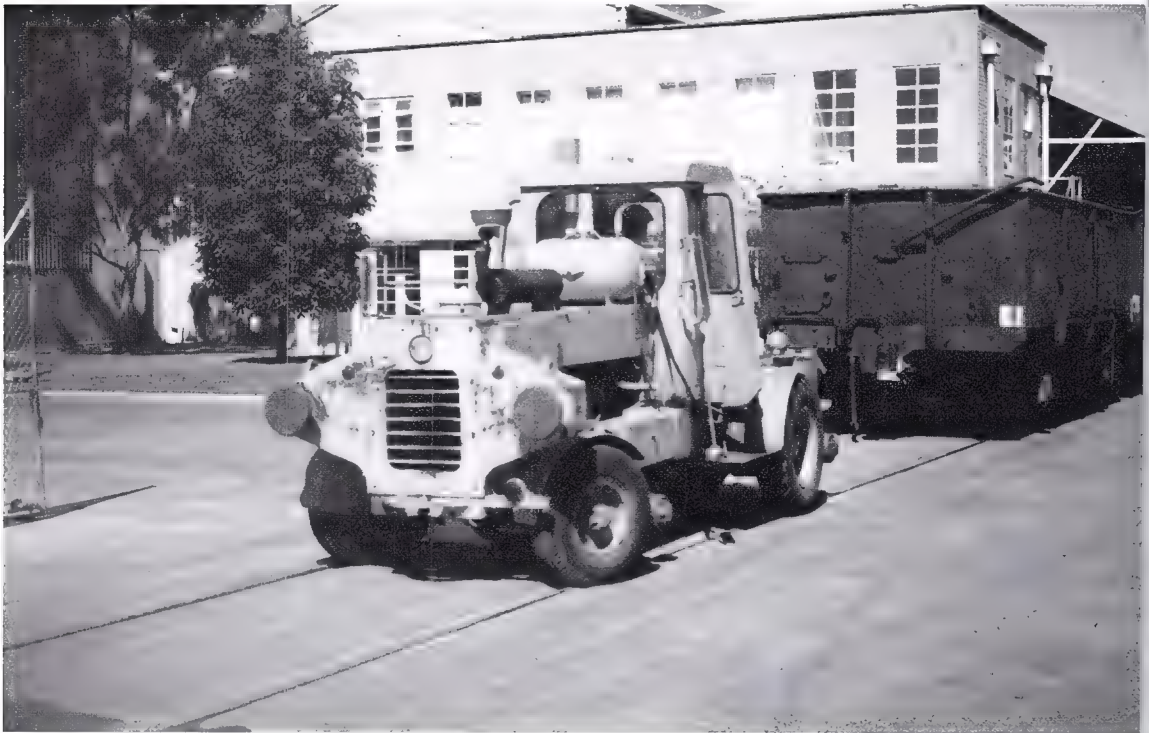
South Dynon Loco on 1.11.85. Those with a sharp eye will be able to find 42 locos with every current V/Line class represented except W Class. (V Greensill)

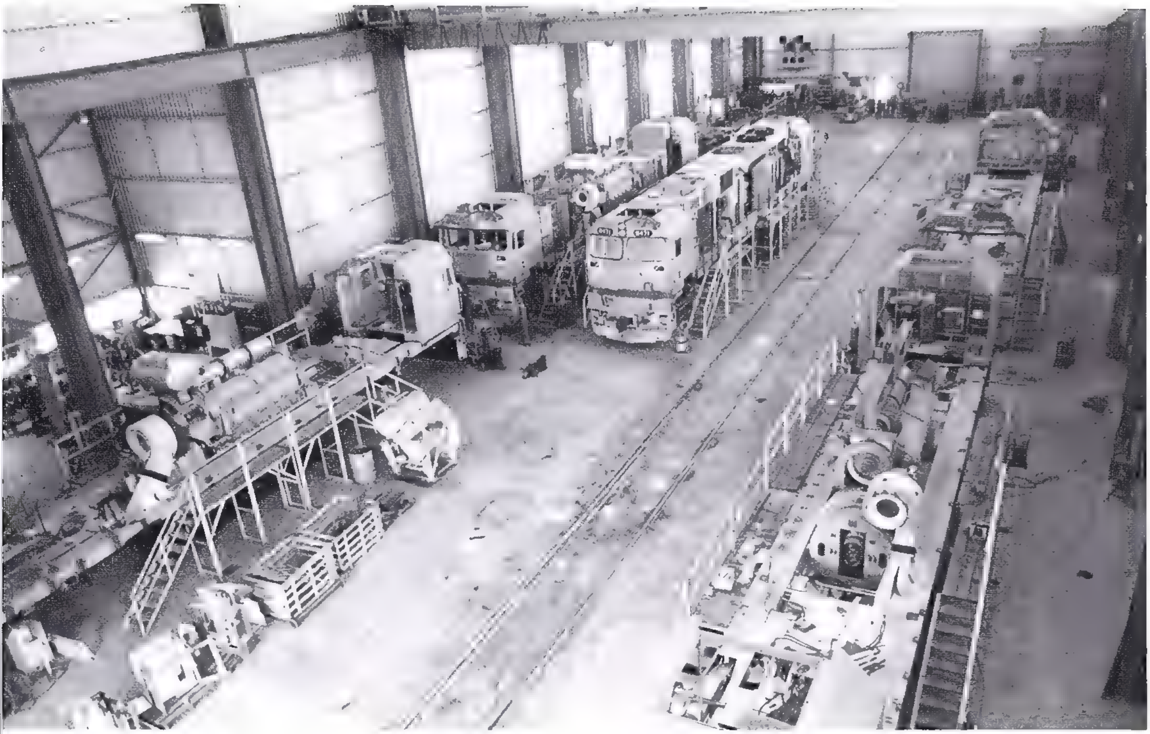


SHUNTING AT NESTLES TONGALA

Above: Y160 hauls a load of G wagons into the Nestles plant at Tongala. Fri.30.1.87.

Below: Nestle's own combined road/rail shunter about to tackle a rake of empty G wagons. Fri.30.1.87. (Both photos L Sutton)

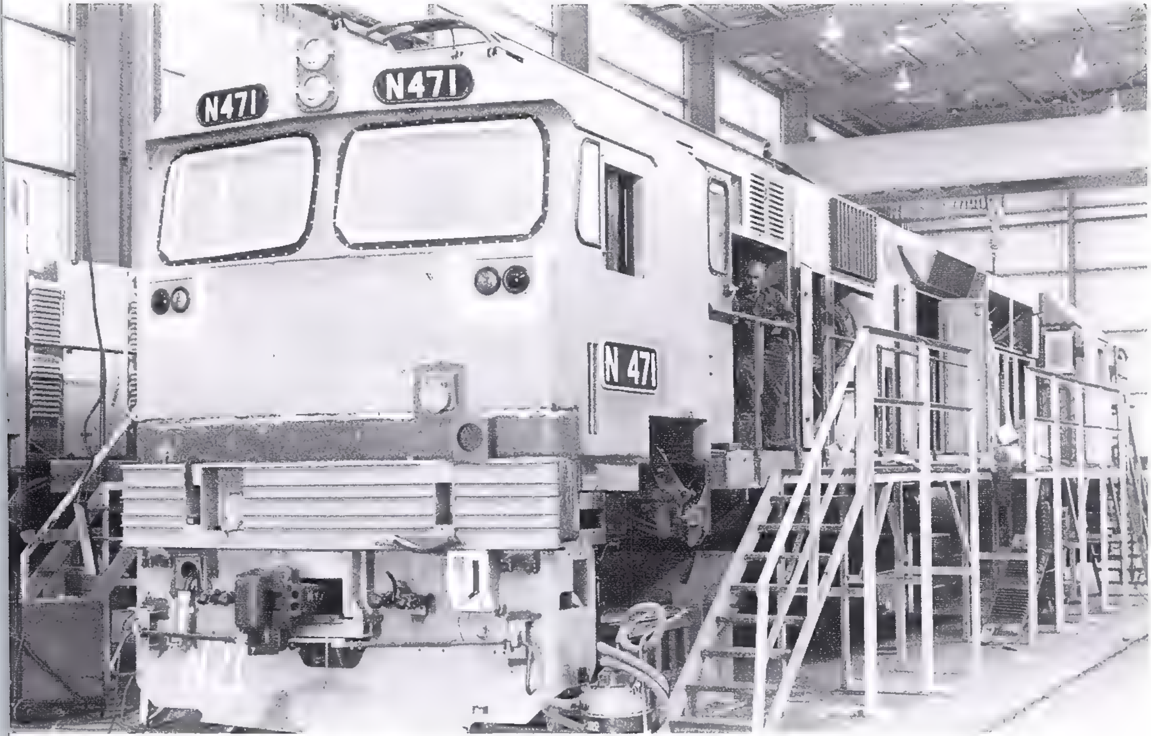


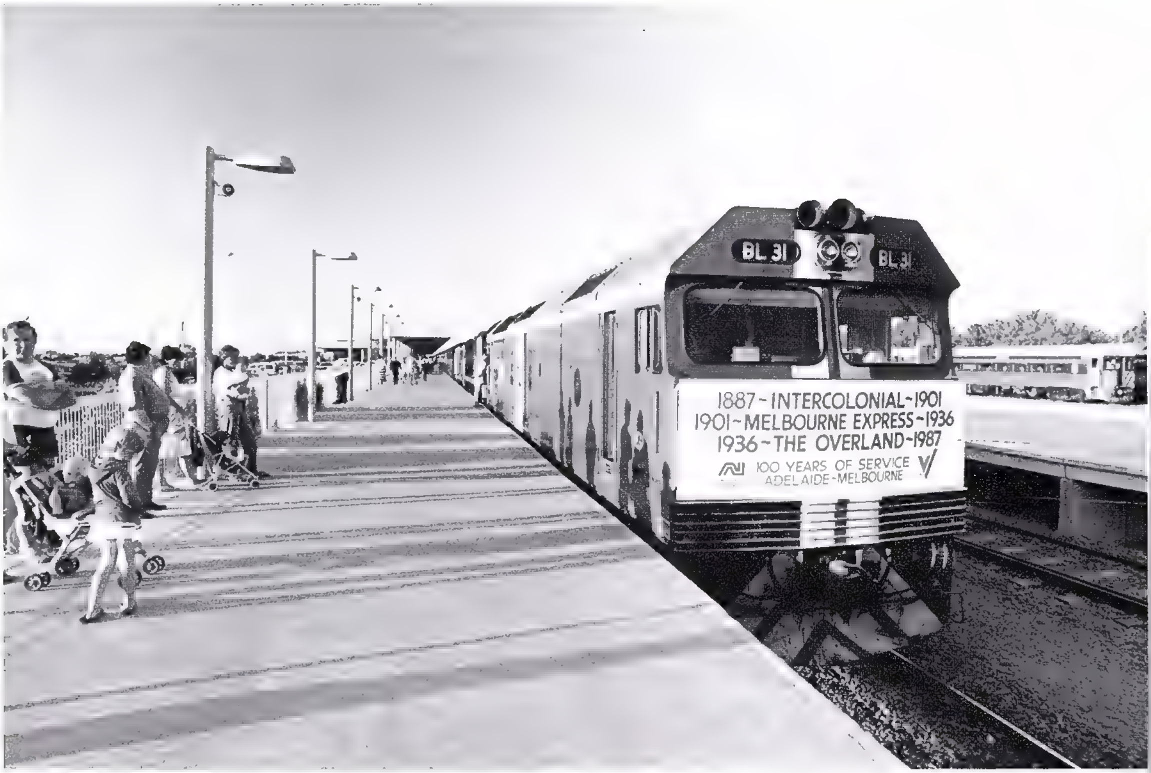


N CLASS UNDER CONSTRUCTION

Above: N class locos in various stages of construction at Clyde's Somerton plant. Wed.28.1.87.

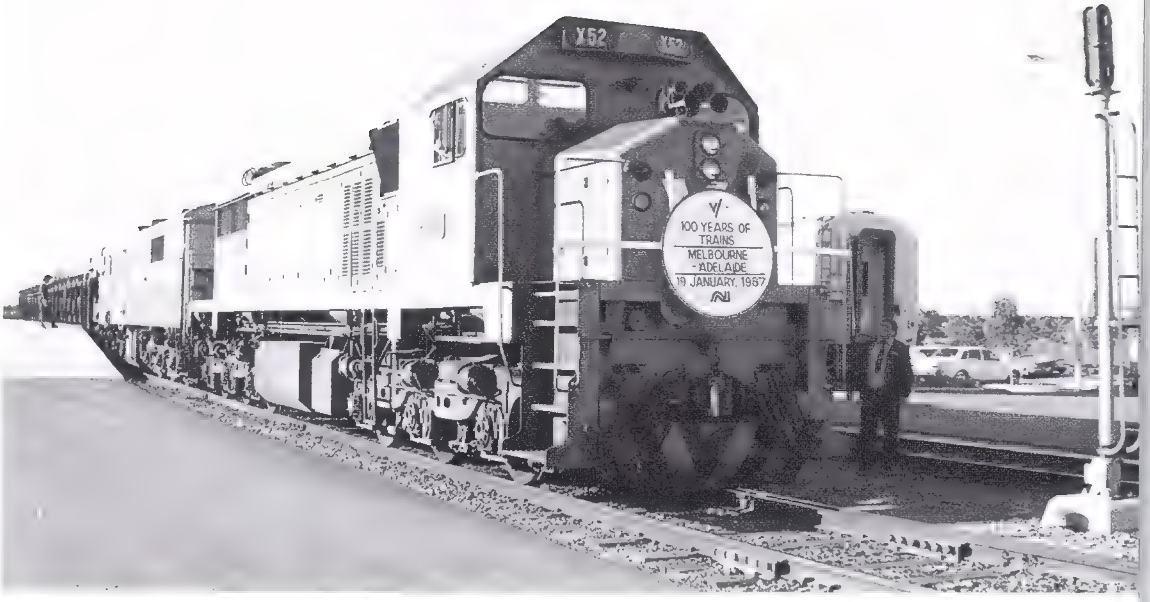
Below: A closer view of N471 under construction on the same day. (Both photos B Baker)




BL 31
BL 31
1887 ~ INTERCOLONIAL ~ 1901
1901 ~ MELBOURNE EXPRESS ~ 1936
1936 ~ THE OVERLAND ~ 1987
100 YEARS OF SERVICE
ADELAIDE - MELBOURNE

100 YEARS OF TRAINS MELBOURNE - ADELAIDE

On Sun.18.1.87 the 100 Years of Melbourne - Adelaide Trains was celebrated with head boards on the east and west bound *Overlands*. Above, BL31, X50 and 932 prepare to depart from Keswick. Below, on the following morning X52 and an unidentified GM arrived with the west bound *Overland*. (Both photos Bruce Williams)



Works

Stratford Junction: All safe-working facilities with the exception of the arrival home signal from the Maffra line have been removed. The points are now staff locked and the home signal worked from a quadrant at the points. There is a small building on the site which presumably houses the intermediate staff instruments for the section Stratford - Rosedale, and train staff for the section Stratford Junction - Cowwarr. The working timetable for 15.1.87 shows the only daily Up and Down goods running a switch trip to Maffra each day. Services Maffra to Cowwarr are shown suspended and by inference Cowwarr to Traralgon is closed. (WJ)

Note. The following advertisement appeared in the *Age* in the Tender's section on Wed.17.12. The design, supply, installation, testing, and commissioning of a computer based radio controlled tokenless absolute block system (ABCXS) to replace the existing electric staff working on the Mildura line. (BL)

Delays, Derailments, Etc.

Carrum mishap: On the evening of Mon.5.1 an ANR corrugated side open wagon class AOOX2614W formed part of the Up afternoon steel train. The scrap steel load shifted resulting in a door opening and being unable to be closed. The wagon was shunted into the siding on the Down side of Carrum where three, in some cases four suburban trains are stabled overnight, trapping one suburban train and preventing its use the next day. Two V/Line employees arrived at approximately 20 00 and were able to weld the offending door closed after removing some of the load that had shifted in transit. The rest of the siding was used overnight.

The wagon was rescued by Y129 newly painted in V/Line colours which ran light engine to Carrum and coupled to the wagon and returned to Melbourne at 23 00 on Tues.6.1. (RGM)

On Fri.20.1, the service was also disrupted. The 13 52 Down Warragul was involved in a fatal level-crossing accident at Nar-Nar-Goon; this train was cancelled and the suburban set was still at Nar-Nar-Goon that night. Other trains were delayed by single-line working past the accident scene, with average delays of 15 minutes. The 18 09 Up Warragul had a particularly poor run. The Down service to form it arrived Warragul 22 minutes late at 18 18 and shunted to the Up platform quickly, but there was a further delay waiting for a driver. The Up journey started at 18 44. After a speed restriction in the section to Drouin the train ran steadily 36 minutes late to the home signal at Nar-Nar-Goon, where there was a long stop to cross the 18 05 Down Bairnsdale coming off the single line. Departure from Nar-Nar-Goon was 61 minutes late, reduced to 57 minutes by Dandenong, as the Pakenham - Dandenong running times have not yet been adjusted for 115 km/h running. The train left Dandenong at 20 05, preceding the 20 04 Up local, and proceeded to run express to Caulfield, although there had been no announcement anywhere that its normal stopping pattern (all stations Warragul to Melbourne except General Motors) would be varied. There was a three-minute stop at Noble Park while the stopping conditions were decided on, after which it stopped Caulfield and Flinders St only. Arrival at Caulfield at 20 26 was 49 late.

Mr Tom Roper, the Minister for Transport commences bridge excavations by the combined road/rail bridge at Echuca on Thurs.19.2.87. (*Riverine Herald* photo)

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Taildisc

VQDW CONTAINER WAGON:

Regarding your questions on p. 62 of 2.87 *Newsrail* about its VQDW wagons I would like to add a little to the overall picture.

Firstly, I do not know their complete history as I have written to SRANSW to try and find out why two VQDWs were reclassified into NQMWs. The two wagons mentioned VQDW 40-59 are part of a group of 30 VQDWs purchased/or leased from V/Line as of 1.6.86.

The VQDWs to be leased were: 1, 3, 26, 30, 31, 32, 33, 34, 35, 36, 38, 40, 41, 43, 44, 45, 46, 47, 48, 49, 50, 51, 57, 59, 60, 64, 68, 69, 74, 75.

As mentioned, I have written to SRANSW to confirm if these wagons were leased and are they being recoded to avoid them from being sent back to V/Line every time they are empty by mistake?

Just before I start into the wagons history, I must also mention I do not know why some of its class were set aside during 1985 at Munistone near Tottenham or carded modifications South Dynon.

VQDW History:

The VQDW wagon were built in three groups of 25, with construction starting in late 1973 with the final class member entering traffic 6.86.

The first group 1-25 was built as FCF class item in 1977 reclassified FCW and finally commencing 3/79 recoded to VQDW. So the last two groups were built after 1979; they entered traffic as VQDW.

No.1-25 10.73 — MO76. Built Newport
No.26-50 2.84 — complete by 6.84. Built Newport
No.51-75 9.84 — 6.86. Built Newport

The original concept of the VQDW when built was to convey Thomas Nationwide Transport/Altrans jumbo containers of auto-motors and components between GMH, that at Elizabeth SA, Fishermans Bend Victoria, Pagewood NSW and Acacia Ridge Queensland. This was 1973 since which some of these plants have shut down.

With minor differences in design the skeletal container flat wagons were constructed as follows, for the VR (50) at Newport, (construction cancelled at 25), for NSWPTC 32 JCW (NQJW) from Commonwealth Engineering (NSW) and for SAR — 16 SFCW (AQDW) class from Islington Workshops SA.

As previously mentioned these wagons were designed to carry two jumbo containers or various combinations of standard ISO containers. A "jumbo" container measures externally; height 2800 mm, width 2500 mm, length 12100 mm against; a standard 40 ft container, height 2400 mm, width 2400 mm, length 12100 mm. The combined length and height of these containers limit them to be carried on this class of wagon because of clearances especially within curved tunnels.

To achieve this clearance, its high speed freight bogies are fitted with 838 mm diameter wheels compared with a standard wheel diameter of 921 mm, Having lowered the wagon the couplers have to be raised 51 mm by a goose neck in the coupler shank. Therefore because these wagons have bogies with smaller diameter wheels its last letter in its code 'W' indicates this and in theory are bogie exchangeable within this limited group.

To come back to the VR side of its story all did not go as planned. Of its origianl order of 50 (FCF) only 25 were built as an industrial dispute arose due to the use of long wagons in Dynon Yard. Ultimately an agreement was reached restricting their use to direct traffic between Adelaide and Sydney in rakes of no greater than 6 in train.

FCF 1, 2. 10-11.73
FCF 3. 1.74
FCF 4, 5, 6, 7, 8, 9. 2.76
FCF 10, 11, 12, 13, 14, 25. 5.76
FCF 15, 16, 17, 18, 23, 24. 6.76

As to when FCF 19, 20, 21 and 22 entered service I do not know as they were used for steel transport within the Newport Workshops area. The 1.3.76 Register shows 25 on its books and eventually 25 were in container traffic.

After a hesitant start with the VR, I assume the industrial restrictions were overcome as V/Line built another 50 in two groups of 25 each as previously stated. One of the problems with this class in general traffic is that if loaded with four RACE containers to capacity they would be overloaded, wagon capacity 53 tonnes, four containers 80 tonnes.

If I get written information from the SRANSW I shall forward it to you. However in the meantime I thought I would pass on what I believe is correct information, however, like all stories there can be variations. I hope some other people contribute so its full story will come to light. As you are aware we all concentrate on the front of the train and its rollingstock is glossed over. (PTE)

References:

VR Plan F5
Railway Transportation, 2.74, 4.74.
Newsrail, 5.74, 7.76, 9.76, 12.76
ARHS Bulletin (Rollingstock deliveries) series 33 and 42.

Notes and corrections: Feburary 1987.

Page 46, column 2, last line of first (continued) paragraph terminus is usually at Lonsdale St (not Latrobe St).

Page 54, column 2, last line "Level crossing signs were in situ"

Page 55, column 2, no rail wagons at Natimuk either (my omission). Column 2, 2nd paragraph "new yellow tarpaulins since 24.11 (incorrectly typed 28.11). Column 2, 4th paragraph, I am aware of one crane at Balmoral.

Page 59, railcar item. Comeng at Dandenong are manufacturing railcars for South Australia.

Natimuk (closed 8.12.86). There were no rail wagons at this station on Thurs.18.12.

The Horsham - Noradjuha line was opened in 1887 so the section East Natimuk to Noradjuha closed just short of its centenary. (OHB)

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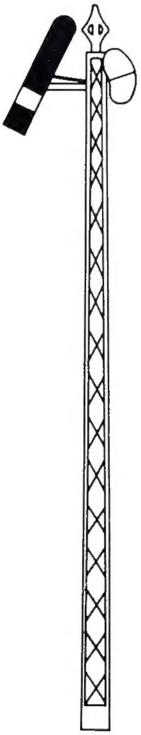

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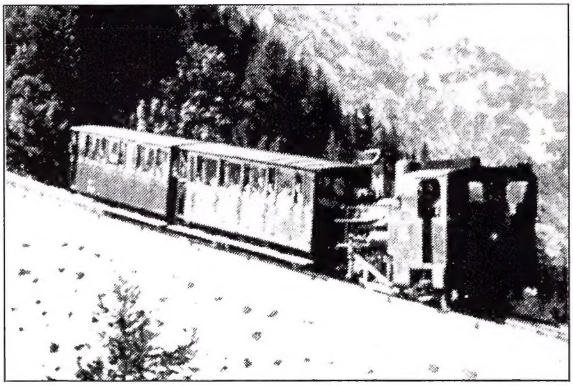

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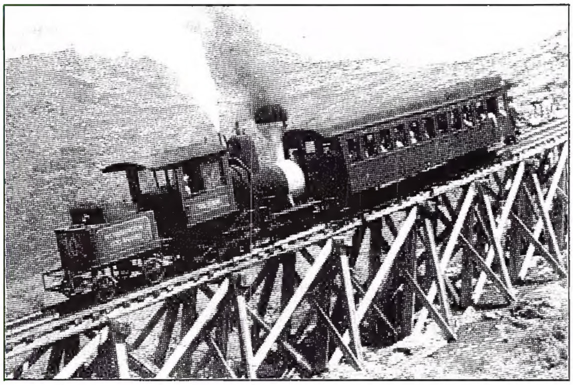

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